DOCUMENT RESUME

ED 133 867 EA 009 126

AUTHOR	Hay, George Andrews
TITLE	Educational Finance and Educational Reform in Peru. Financing Educational Systems: Country Case Studies 5.
INSTITUTION	United Nations Educational, Scientific, and Cultural Organization, Paris (France). International Inst. for Educational Planning.
PUB DATE	76
NOTE	321p.; Some tables may be marginally legible due to small type of original document
AVAILABLE FROM	IIEP Publications, 7-9 rue Eugene-Delacroix, 75016 Paris, France (10.00 francs)
EDRS PRICE	MF-$0.83 Plus Postage. HC Not Available from EDRS.
DESCRIPTORS	Costs; Developing Nations; *Economic Development; *Economic Factors; *Educational Change; *Educational Development; *Educational Finance; Elementary Secondary Education; *Enrollment Projections; Enrollment Trends; Expenditure Per Student; Higher Education; Prediction; Tables (Data); Teacher Salaries
IDENTIFIERS	*Peru

ABSTRACT

This study examines the major forces that have affected the costs of Peru's educational development in the last decade and the forces that are likely to affect its educational finance until 1980. Chapter 1 is an introduction to the study and to the geographic setting. Chapter 2 provides a descriptive and historical analysis of the past decade's accomplishments in education. It describes past expenditure/cost trends and analyzes per pupil costs and the major contributing cost variables such as teacher salary policy. The new features of Peru's educational reform are discussed in Chapter 3. Chapter 4 discusses the Peruvian economy in the past decade. This historical and descriptive chapter prepares the way for the projections of economic performance offered in Chapter 5. Chapter 6 offers projections of educational costs to 1980. The major question raised by this study is whether ambitious educational goals can be made consistent and compatible with probable economic growth. (Author/IRT)

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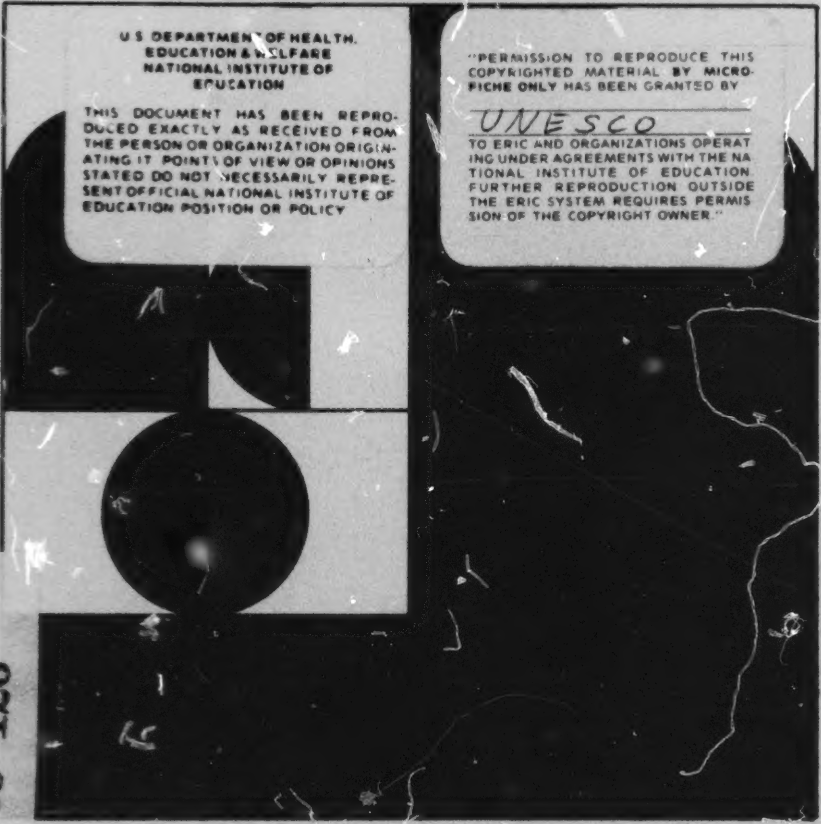
Financing educational systems: country case studies 5

Educational finance and educational reform in Peru

George Andrews Hay



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Educational finance and educational reform in Peru

George Andrews Hay

Paris 1976
International Institute for Educational Planning

Composition and make-up by IIEP
7-9 rue Eugène-Delacroix, 75016 Paris
Cover design: Dominic Toulec-Marten

Printed in France by Louis-Jean, Gap

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Aims and methodology of the IIEP research project on financing educational systems

This research project, launched by the International Institute for Educational Planning early in 1970, originated in an inquiry as to the real possibility of the developing countries financing their educational objectives in the course of the United Nations Second Development Decade, bearing in mind the high level of expenditure that has already been reached in most cases, the constant rise in unit costs, and the increasing competition within the state budgets themselves that education will probably encounter in the future from the financing of productive investments, debt servicing, and other predictable expenditures.

Viewed in this light, therefore, the research is not strictly limited to the study of financing techniques, but has wider aims:

1. To explore the real weight of probable financial constraints on the development of educational systems up to 1980.
2. To study the various financing methods likely to augment resources, and to define a strategy of educational financing more closely adapted to social and economic realities.
3. To analyse certain alternative solutions (new structures, new technologies, etc.) capable, by reducing costs or improving the efficiency of the teaching process, of leading to a better balance between educational targets and the resources available for them.

In addition to these extremely concrete objectives, concerned with the real problems facing educational planners in all countries, the collation of the essential data should provide the basis for the answers to more theoretical questions, affecting, for example, the type of correlation between educational expenditure and the level of development, between the level of expenditure and the method of financing, between the level of unit costs and the development of the educational system, etc.

With these aims in mind, two types of study are being undertaken:

1. National case studies for the retrospective (1961-70) and prospective (1980 or beyond) analysis of the expenditure, financing and costs of educational systems in the widest and most representative possible sample of countries - at least fifteen; these studies should, as already stated, reveal both the magnitude and the nature of the

financial constraints to be expected in the general framework of the development of the economy and of the finances of the state, and the level and various alternative forms for the possible development of educational systems. These studies will thus cover the whole field of educational financing, costs, and policies in each country concerned.

2. Specific case studies covering, first, the different possible methods of financing (centralized, decentralized, public, private, etc.) and, especially, original ways of raising supplementary resources, and, secondly, the study of new educational solutions calculated to reduce costs.

These studies are being carried out in Member States by the IIEP in close collaboration with national specialists, either from government departments or from universities; in many cases the research is a concerted effort by the IIEP and the country concerned, for the common benefit of both parties and of the international community as a whole.

This project will culminate in a synthesis report summing up the findings relating to all the problems posed. The studies themselves are being published as single monographs in the collection 'Financing educational systems', comprising two series, one of country case studies and one of specific case studies.

The financial outlay for the implementation of this ambitious project could not be provided from Unesco's basic grant to the Institute. The IIEP is deeply grateful to the Member States and various organizations who, by their voluntary contributions, have enabled it to launch and pursue this research: in particular to SIDA (Swedish International Development Authority), NORAD (Norwegian Agency for International Development), DANIDA (Danish International Development Agency), CIDA (Canadian International Development Agency), the Republic of Ireland, and the Ford Foundation. The Institute is also deeply indebted to the Member States and national specialists in various parts of the world who have agreed to co-operate with the IIEP in carrying out these studies. The publication by the IIEP of certain studies by outside consultants does not necessarily imply, however, the Institute's agreement with all the opinions expressed in them.

Preface

This case study by George Andrews Hay on educational finance and educational reform in Peru is another in a series of national studies conducted by the International Institute for Educational Planning which examine the prospects for developing countries in financing their educational objectives in the United Nations Second Development Decade.

In the decade of the sixties Peru, like most developing countries, achieved high rates of expansion of the schooling system: 7.3 per cent compounded annual rates of growth of enrolment, with secondary and higher levels expanding half again as fast. Although population growth rates at 3.1 per cent during the decade are among the highest in the world, this major expansion of the educational system has substantially increased the enrolment ratios for the younger members of society. More than a fifth of all Peruvians are in schools. As many somewhat older pupils and adults have entered or re-entered primary schooling, apparent enrolment ratios reach 100 per cent at first level and almost 40 per cent at second level.

The vast quantitative expansion of schooling has meant that educational costs as a proportion of public expenditures have increased from 13 per cent to roughly 20 per cent during the sixties. Educational levels within the population have risen and illiteracy among the younger age-groups has been reduced markedly, especially among women. But as Peruvians themselves have concluded, education, for all its rapid quantitative expansion, has still not fully satisfied social and economic needs.

The Peruvian educational reform is a bold and far-reaching attempt to recast an educational system which the present government and leading national educational thinkers have seen as archaic and outmoded, overly academic in its orientation, and inadequate for bringing people from all segments of the diverse Peruvian society together in the tasks of building a unified society. Educational reform is intended to complement agricultural and industrial reform, and to help transform the country's dependence on an imported culture and on metropolitan norms in a vast multi-lingual and multi-ethnic society.

In this study George Hay has analysed the educational change of the past decade and described the reform and its new features such as nuclearization in detail. In keeping with the format of these country case studies, he has used the analysis of cost data to build a base upon which to project the requirements of targeted enrolment increases for 1980, examining in detail those features that are most likely to affect future costs.

Although the study bears much in common with others in this series, a number of factors appear which are of particular significance in Peru. Thus, for example, this case shows the powerful effects of teacher salary conditions on educational costs. It also shows that unusually high grade repetition rates and delayed entry or re-entry into schooling can complicate the problem of planning. For instance, although apparent first-level enrolment rates probably exceed 100 per cent, universal schooling is far from complete: more than 25 per cent of the normal first-level age-groups are not yet in school. An especially challenging problem remains of reaching this last group which is mainly located in dispersed rural and less accessible areas.

It is a major challenge to the educational planner to deal with the cost implications of the qualitative changes and organisational restructuring that attend an educational reform. George Hay has tried to deal directly with these matters in a way which may be of interest to those concerned with the methodology of costing qualitative change. Starting with projecting future enrolment costs on the basis of current unit cost indicators and enrolment projections of the Educational Plan, he analyses the most likely cost implications of the various key features of the reform: teacher retraining costs, costs of further and more expensive geographical dispersion of schooling, new administrative costs at the regional and 'nucleo' level. But there is also an analysis of a number of possibilities of financial gain from the reform such as potential economies from the reduction of grade repetition, economizing on the placement and utilization of physical and material resources, among others.

This study also looks at the past performance of the Peruvian economy and projects economic performance until 1980 with an eye to projecting the maximum amount of resources likely to be available for education. The author has produced economic projections which anticipate somewhat less real growth than is called for in the national economic plan, but not out of line with projections developed by other external agencies. Even under the most favourable likely economic conditions, it appears there will be difficulty in meeting the full objectives of the reform with its ambitious timetable and particularly in putting into operation the new pattern of vocationally-oriented secondary schools by 1980.

The study shows that even under relatively favourable economic conditions for the rest of the decade of the seventies, there would be a need for a much larger proportion of all public expenditures and of Gross Domestic Product, to be devoted to educational expenditure. This is an especially important conclusion, because choices may have to be made and priorities given, and a national education reform, by its very nature, is difficult to introduce in partial fashion.

Those who are interested in the finance of education in the context of rapid growth and in the problems of costing qualitative change in education will find this study of particular interest. Those who, with the author and the IIEP, look with sympathetic expectation to the ambitious goals of Peru's educational reform will wish to continue to follow the events described here and the questions raised in the future.

The IIEP is grateful to the authorities and specialists in Peru who gave such full and interested co-operation in the preparation of this study, and to Professor Hay for presenting such an instructive account of the findings.

Hans N. Weiler
Director, IIEP

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The author wishes to acknowledge the warm and generous reception he received as a visitor at the IIEP, and from Mr. Raymond Poignant, its then Director and his staff. Mr. Claude Tibi has been especially helpful and encouraging and has taught the author much. Aside from the resources of the Institute, acknowledgement is in order for the partial financial support provided for this study from the sabbatical leave programme of Reed College, for the editing assistance of Virginia Hancock, and for the translations of documents by Katharine Kadinsky-Cade. The author greatly appreciates the hospitality and co-operation provided by the officials of the Ministry of Education in Lima during field missions.

I. Introduction

A. SCOPE OF THE STUDY

In keeping with the format of other country studies in this series, this study examines the major forces which have affected the costs of educational development in the past decade in Peru, and those forces which are likely to affect its finance in the future until 1980.

Although much of Peru's performance is unique to its own national experience, its pattern of rapid educational expansion has been repeated in the majority of developing countries in recent times. Enrolments at every schooling level, and enrolment rates for school-age populations, rates for literacy and for the 'catching-up' of schooling for young and older adults have advanced rapidly, and the increases in university, post-secondary and vocational schooling have also been dramatic. Education in the developing countries is undertaken today at a scale and rate of increase which increasingly places its requirements close to the financial capabilities of the economic system upon which it must depend for public financial support.

The objectives of this study are divided into several major parts which are the respective subjects of the chapters which follow. It is hoped the parts come together in an attempted answer to what the likely relationship will be between Peruvian educational goals and economic possibilities in the period to the end of the decade.

First, in Chapter II, we review by a descriptive and historical analysis of the past decade the recent accomplishments of enrolment, degree of education in the population, the teaching force, and the patterns of performance as analysed in more detail by the range of schooling levels from pre-school education to university and vocational education. We also describe past expenditure-cost trends which lead to an analysis of unit (per pupil) costs and the major contributing cost variables such as teacher salary policy.

Peru's is a timely and interesting case because of its widely heralded and widely watched attempt at a national comprehensive educational reform. The reform, begun in 1971/72, is intended eventually to transform the entire educational system including the goals and methods of schooling and the popular attitudes toward the place of education in society.

The reform targets, set for 1980, imply a fast pace of change as well as change of far-reaching scope and content. The qualitative features of reform are to coincide with the last phase, already under way, of the move toward universal primary schooling and adult literacy. The reform involves a strong reorientation of all levels of schooling toward vocational and professional training and technical studies which lead to worker capability. Its new methods are to be embodied in a system of nuclearization, a new and Peruvian form of local organization and administration of groups of schools. The new features of the reform are the topic of Chapter III.

In order to match education with the economy, we move in Chapter IV to a discussion of the Peruvian economy in the past decade. We examine the performance of the major sectors, including the special problems of agriculture and mining, the areas of recent strong performance, and as well, the areas of persistent difficulty. The impact of international trade and international capital movements is seen to be important. Noting the good general performance of the economy over the decade, we also note the fluctuations in performance over time, the period of high growth which ended in financial crisis and relative recession toward the end of the sixties. The extent to which the educational system is sensitive to economic performance becomes more apparent in noting these time trends. One purpose of this historical and descriptive section is to prepare the groundwork for projecting future economic performance in Chapter V.

Our economic projections of Chapter VI do not offer a prediction of what will necessarily happen by 1980. They test the reasonableness of assuming two possible growth rates for the economy, a 'minimum' and a 'maximum', from which can then be derived rates at which funds for public expenditure would be presumed to grow, the potential source for educational finance. Such an exercise shows reasonable constraints. It puts a type of 'burden of proof' on projections which imply funds available at a much higher rate. It asks more forcefully what sectors could grow more than posited, what greater sources of capital formation could reasonably be expected, what further relief from balance of payments and foreign borrowing constraints could be achieved, or what combination of these could be achieved in order to accept higher rates than we have tested for a ten-year projection period. Extremely high economic growth could take place under ideal conditions. But the analysis leads from what seems likely.

From the projection of the economy we derive two possible rates of increase of funds for all public expenditures. This establishes a setting within which educational spending from public funds can grow beyond that inherent in economic growth only if (i) education will grow further as a proportion of public expenditure, or (ii) public expenditures will grow relative to GDP (Gross Domestic Product), or (iii) the economic growth itself will have to exceed our estimates. Thus the analysis of economic and public funds capacity, couched in terms of probable 'permissible' rates of growth of educational expenditure, is to be compared to our later projections of the educational system and its reform.

In Chapter VI we attempt a projection of educational costs to 1980. Our basis for the projections is a test of the enrolment goals of the Education Plan of 1971-75 which also spells out the long-range target of full implementation of reform and enrolment goals to 1980. The analysis is undertaken in two stages of partial analysis, one with and one without, the assumptions of the reform. In each case the form of the projections is the same, a statement of the average annual future growth rate of public expenditures using 1970 figures as a base. The first mode of analysis involves a series of projections testing different hypotheses of change in teacher salary and material costs using historical unit costs as a base, what we have called 'aggregative' projections. These largely reflect the impact of these cost hypotheses given official plan enrolment projections. The second mode of analysis deals directly with reform. What are those features of the reform which seem most likely to affect unit costs; what is the possible order of magnitude of those changes which can be given an estimate? Some features of the reform may bring cost gains and we have tried to identify these as well. The goal in this section is to assess the cost impact of qualitative educational change, at least in a rough way.

The two parts of the analysis can then be brought together. One part represents the burden on future expenditures which will be derived from enrolment assumptions and salary and other aggregative policies; and the other part will be derived from features of educational change and reorganization. Adding the effects on costs, our final conclusion suggests future stress between educational goals as stated and the capabilities of the economy and the public revenues it can be expected to generate.

Thus the question that is raised in this study as in many of the others in the series is whether Peru will continue to face, perhaps with increased intensity, the question of whether ambitious educational goals can be made consistent and compatible with probable economic growth. The past relatively impressive growth of the economy and the history of substantial quantitative educational expansion at least provide grounds for optimism that future growth and improvement on a considerable scale can continue. But the question is raised whether there is not also evidence that further priorities may have to be set and further choices made if the costs of expansion and of reform are to prove in excess of resource availability.

For readers not familiar with it, a brief geographic description of Peru follows. This is a geography, it must be recalled, which has always challenged cultural and economic integration within the country.

B. THE GEOGRAPHIC SETTING

Peru has an area of about half a million sq. miles (1 285 000 km^2), ranking after Brazil and Argentina as the third largest country in South America, and for example, roughly twice the size of France. The mid-1971 population is estimated at 14 000 000 and the relatively low density of population figure (about 10 per sq. km.) can be misleading unless one bears in mind the country's varied geographic composition.

Peru is readily broken into three sections by its physical features. The narrow Pacific coastal strip stretching about 1 500 miles from Ecuador in the north to Chile in the south is largely barren desert. With only 10 per cent of the land area, it contains nonetheless about a third of the population, most of the major urban areas, and some of the most important irrigated farmlands. The high mountains to the east cause the moist Atlantic easterly winds to deposit their rainfall on the eastern slopes and act to shield the coastal strip, producing a remarkable combination of high humidity, cloudiness much of the year, but little or no rainfall. The coast itself is a barren and irregular shoreline and affords only a few good natural harbours.

The highland Sierra, the second major region, containing about 25 per cent of the land area and about half the population, is the homeland of the extensive ancient Inca Empire. It contains high altitude pastureland and varied but limited possibilities for indigenous crops. The western slopes tend to be cool with scarce moisture except in certain valleys and around irrigation works. The eastern slopes receive the rainfall, and conditions tend toward jungle at the lower and warmer altitudes. Three major tributaries of the Amazon form in these eastern slopes, but the river systems in this area are frequently steep and too swift to form natural agricultural valleys. Most of the indigenous peoples of the highlands are engaged in subsistence agriculture. There are about six million acres under cultivation and about 26 million in grazing in the high and relatively barren elevations. Most of the population of the region live in the 1 500 Indian villages or the small towns and haciendas that exist in the Sierran Valleys. The entire area is mountainous and difficult to traverse and is linked to the coastal area by relatively few roads which are difficult to maintain. In short, the mountains make a considerable barrier against efforts to integrate the country physically and economically.

The third major region is the eastern jungle or oriente, a vast expanse at the headwaters of the Amazon, containing about two-thirds of the land area and about one-sixth, the remaining portion, of the population. It is partly foothills and partly lowland swampy areas, inhabited by forest Indian tribal groups and containing few and scattered urban settlements. The foothills section of this region contains considerable promise for development of agriculture, particularly as sections are being completed of the major Simon Bolivar north/south highway. Much of the area is little explored, and has been little exploited in the past.

The overall picture is a country with challenging barriers to internal communication, containing about one-third barren or desert land, somewhat more than a half in forest or jungle, about 10 per cent in meadow and pastureland and just a few percentage points in cultivated farmland. With a population growth rate which has steadily averaged over 3 per cent (3.1 per cent, 1960-70) there is considerable pressure on presently available agricultural resources.

Internal migration of the population has significantly altered its regional composition in the last several decades. The coastward migration from the Sierra to the urban areas has shifted the proportion of total population living in the coastal area from one-quarter to one-third from 1940-60. These trends have continued and perhaps accelerated in the past decade. During the same period the eastern jungle areas retained a fairly constant share, with the result that population has relatively decreased in the Sierra, and in some areas it has decreased absolutely as well. Much of this migration is only another case of the major shift toward urbanization so frequently observed in developing countries in recent decades. In the case of Peru, the growth in population, the inter-regional migration and, the varied and limited immediate agricultural potential present special challenges to the development process. These internal patterns must be borne in mind as we look at the aggregate measures of development of the educational system and the economy.

II. The educational system in the recent past

A. THE PERUVIAN EDUCATIONAL SYSTEM IN THE SIXTIES - THE GENERAL TRENDS

In this section we consider the structure and the development of the Peruvian educational system during a period of major growth. We examine briefly such features as the underlying population and age-structure trends, the growth of enrolments within the various levels of the formal school system and within the adult and out-of-school programmes, and the expansion of the teacher force and physical inputs of plant and equipment. We also consider the financial counterparts of this growth, the increases in recurrent and capital expenditure which have characterized the period.

The most noticeable feature of the decade is the rapid expansion of the numbers in school in the late fifties and sixties. It constitutes a sustained rate of increase among the highest ever experienced internationally. This growth rate, which has sometimes been labelled explosive, has been accompanied, naturally enough, by problems, some which have long existed and others which have only been recently intensified. Most of these problems are being recognized by educational authorities.

We will also concern ourselves in later sections with a review of such major challenges as the search for qualitative improvement in educational performance to match the remarkable advance in numbers. Within this area there are recognized needs for improved administrative organisation and performance, greater teacher productivity and performance according to changing educational goals and practices, the putting into effect of the long quest for administrative decentralization of the school system, and recent moves towards educational reform. The reform, described in the next chapter, is itself a major restatement of educational goals and will imply an important restructuring of the school system. But the first task is to portray the substantial expansion of education which was accomplished during the past decade. We do this by first looking at the educational system as a whole in the first half of the chapter, then considering the various branches and levels in more detail in the second half.

(i) General structure

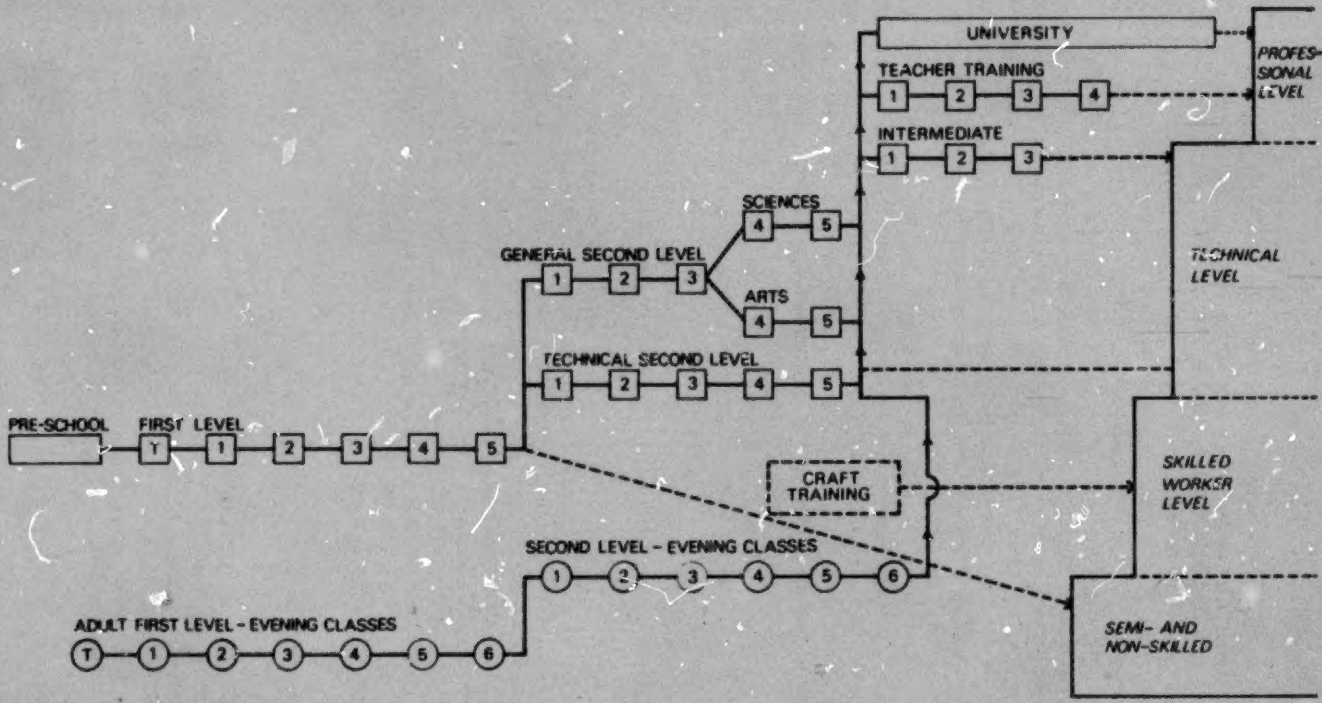
Until the recent reform law of 1972, education was governed by the Education Law of 1941 (Ley orgánica de educación pública) as subsequently modified by administrative and legislative amendment. Within this framework the state is responsible for providing public educational establishments and regulating the activities of private ones. Some of the most significant subsequent laws concerned educational budgeting, acts which provide a strong continuing control on the actual shape of educational development, and such other matters as the declared intention of free and compulsory education, acts on status of the teaching profession, and provision for regional decentralization of school administration. Recent legal acts, in addition to the embodiment of basic reform, have attempted to correct what was felt to be a lack of co-ordination and consistency in the total package of legal provisions.

The educational system comprised the three basic levels usually found (see Chart 1) of primary, secondary, and higher, but to these were added substantial components of pre-school training, adult and evening courses paralleling the traditional school offerings, craft training for technical skills (cursos de competencia) at workshops and special colleges for such purposes. Manpower training has been developed through courses established in industry, in ministry programmes and in the armed forces. In addition, the so-called intermediate level has been expanded, post-secondary non-university training of technical personnel in the National Poly-technics and in the higher schools, for example, of commerce and agriculture. Special training in the fine arts has been available at all levels.

The formal system has been one of six years of primary training, begun at whatever age (although most normally at six years of age) by a 'transition' year. The secondary cycle has been normally five years, three spent in more general studies followed by two years of specialization in the arts, the sciences or a secondary technical stream. The latter has been offered with emphasis on commercial, industrial and agricultural studies. Obviously the charted system represents what has existed anywhere in Peru, and outside of Lima and some of the other urban centres, only a part of this system might exist in a given locality. In the next chapter, we shall compare this structure with that envisaged in the new reform.

(ii) Enrolments

Table 1 and Chart 2 show the growth of total enrolments in the educational system during the decade. Total enrolments grew at a compound rate of 7.3 per cent per annum, about twice the rate of population growth. But the total grew significantly more rapidly in the first half than in the second half of the decade and contains some important shifts in emphasis on the various levels of schooling. Most of the overall drop in the rate of growth of enrolments was associated with a slackening of the rate of increase in primary schooling. Toward the end of the decade it was closer to the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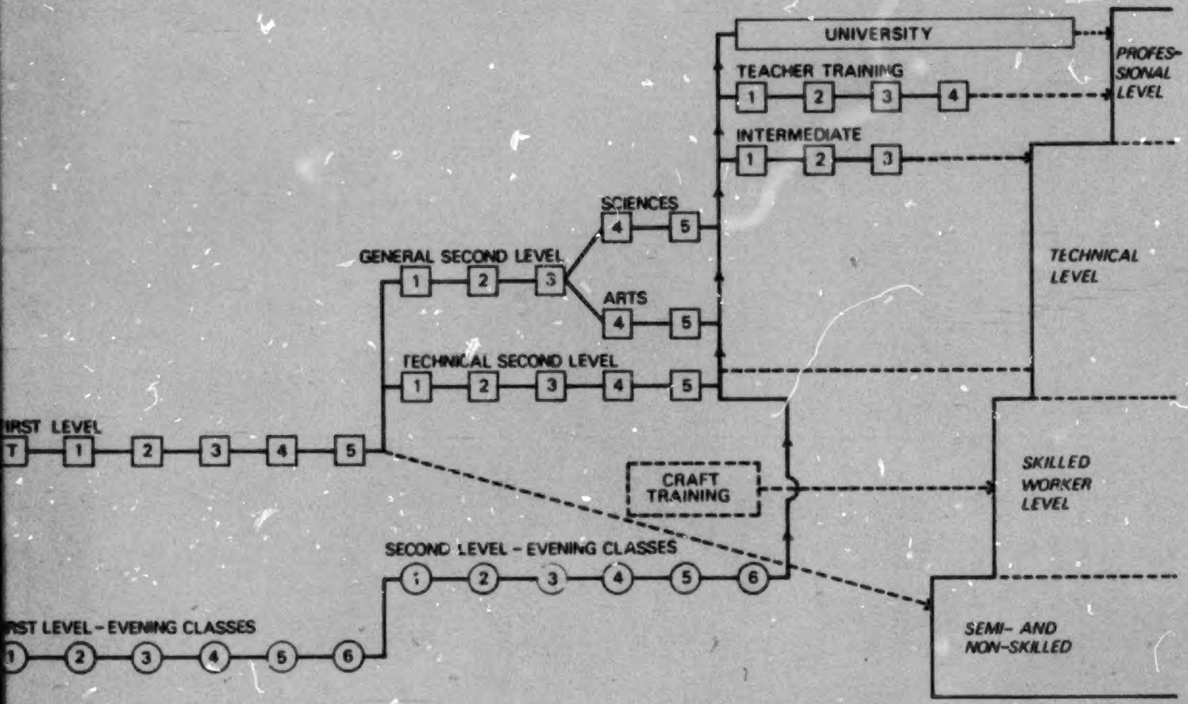
NOTE Entry into craft training is not based on age or level of education

Chart 1. Educational structure before the reform of 1972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T
1
2
3
4
5
CRAFT TRAINING
SKILLED WORKER LEVEL
SECOND LEVEL - EVENING CLASSES
1
2
3
4
5
6
RST LEVEL - EVENING CLASSES
1
2
3
4
5
6
SEMI- AND NON-SKILLED

ft training is not based on age or level of education

Educational structure before the reform of 1972

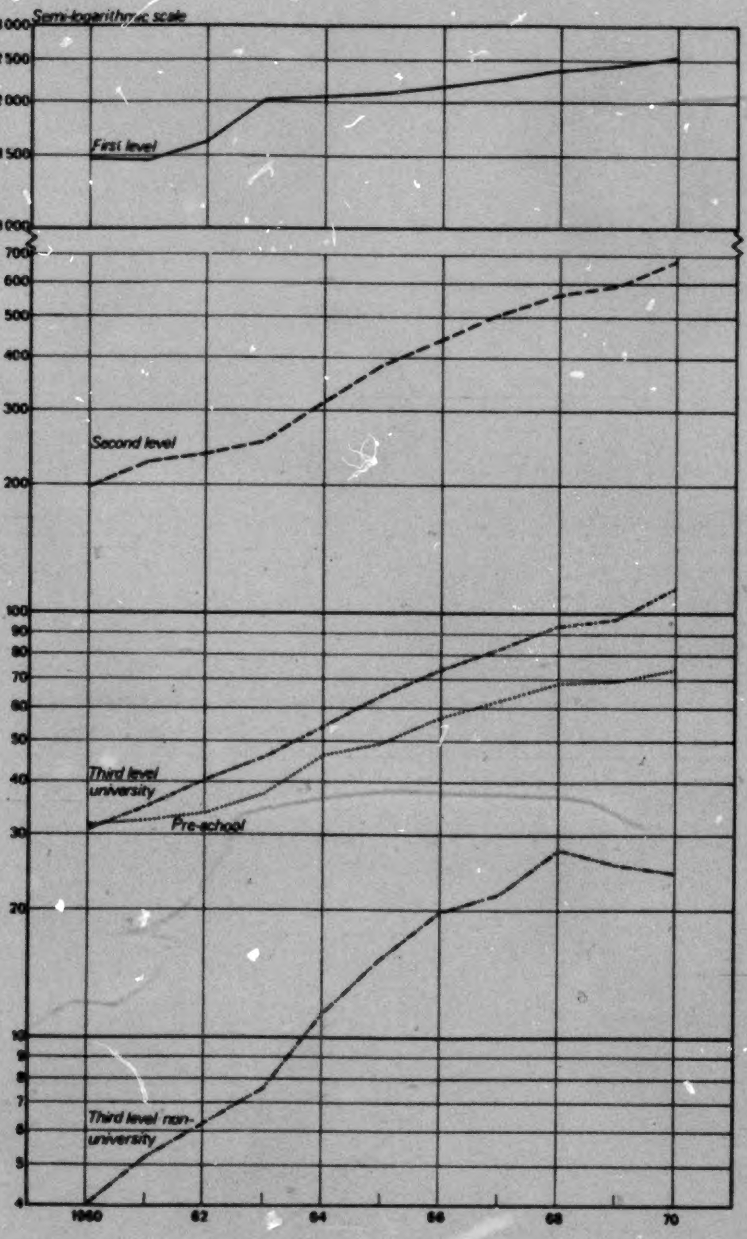

Chart 2. School population by level of education, 1960-70 (in thousands)

Table 1. Total enrolments (public and private) by level of education

	Enrolments			Annual growth rates during periods shown		
	1960	1965	1970	1960-65	1965-70	1960-70
Level	('000)	('000)	('000)	(%)	(%)	(%)
Total Peru	1 728.5	2 630.6	3 484.1	8.8	5.8	7.3
Pre-school	31.6	49.4	74.3	9.3	8.5	8.9
Primary	1 459.6	2 106.4	2 563.4	7.6	4.0	5.8
Secondary[1]	198.2	382.5	674.3	14.0	12.0	13.0
University	31.0	64.5	110.6	15.8	11.4	13.6
Higher non-university[2]	4.0	15.4	24.4	31.0	9.6	19.9
Other[3]	4.1	12.4	37.1	24.9	24.8	24.8

1. Includes day and evening programmes.
2. Includes Intermedia, i.e. Colegios Regionales, Politécnicos and Instituto in the public sector only; Artística in public sector only; and Formación Magisterial, i.e. Normal Primaria, Secundaria, Familiar and Educación Física.
3. Includes Especial, Artesanal and Competencia.

Source: Peru, Ministerio de Educación, Estadísticas básicas series históricas, Lima, March 1972.

Total enrolments (public and private) by level of education

	Enrolments			Annual growth rates during periods shown		
	1960	1965	1970	1960-65	1965-70	1960-70
	('000)	('000)	('000)	(%)	(%)	(%)
	1 728.5	2 630.6	3 484.1	8.8	5.8	7.3
	31.6	49.4	74.3	9.3	8.5	8.9
	1 459.6	2 106.4	2 563.4	7.6	4.0	5.8
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	31.0	64.5	110.6	15.8	11.4	13.6
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and Educación Física.

s Especial, Artesanal and Competencia.

eru, Ministerio de Educación, Estadísticas básicas series históricas, Lima, March 1972.

population growth rate. The other levels continued their very high growth rates, and primary education, still a major part of the total, dropped from about four-fifths to three-fourths of the total of all enrolments. As we shall see, the very high and finally gradually slackening primary growth rates represented some filling out of deficits in primary education within the stock of the population, not just the educating of the normal age cohorts coming along in that period. At the secondary level, growth rates remained high as was true for university, and non-university intermediate education of the technical variety. Each of these branches expanded several times over during the ten years. University enrolments tripled, higher non-university rose by six times and the new programmes of artisan and skill-training showed even greater growth, albeit from relatively small base numbers at the beginning of the decade. Pre-school education for children between the ages of four and seven grew at high rates throughout the period.

Private education is a significant part of all levels. During the period enrolments in the private sector fell only slightly as a proportion of all enrolments. As Table 2 indicates, the proportion of enrolments in private primary schooling remained almost constant and increased slightly in the pre-school level. But it was largely at the secondary level that growth was greater in the public sector. Private enrolments fell from 29.2 per cent of all enrolments at the secondary level to 16.1 per cent. On the other hand, at the university level, the private sector enrolments grew more rapidly, from 10 per cent to more than 22 per cent of the total.

Table 3 shows similar developments in the expansion of the number of teaching establishments for the first part of the decade.

Table 2. Enrolment percentage in private sector of all enrolments at each level

	1960	1970
Total Peru	15.8	15.1
Pre-school	24.4	27.6
Primary	13.9	14.2
Secondary	29.2	16.1
University	10.3	22.1

Source: 1960, Oficina sectoral de planificación; Oficina de estadística educativa: 1970, Peru, Ministerio de Educación, Estadísticas básicas series históricas, Lima, August 1972, Tables 80-86, 93.

Table 3. Number of teaching establishments

	1955	1960	1964	1965	1970	Annual growth rates 1960-64 (%)	Annual growth rates 1964-70 (%)
Total Peru	12 875	15 260	18 722	-	22 166	5.3	2.8
Pre-school and primary	12 345	14 440	17 407	18 839	20 034	4.8	2.4
Secondary	500	775	1 203	-	1 865	11.7	7.6
University	7	11	26	-	32	24.0	3.5
Higher non-university	23	34	86	-	135	26.0	7.8

1. Includes full-time and evening.

Source: 1955-1965 data: División de Estadística Escolar del Ministerio de Educación Pública y Oficina Nacional Interuniversitaria de Planificación, as quoted in: OECD, Human resources, education and economic development in Peru, Paris, 1967, p.46.
1970 data: Peru, Ministerio de Educación, Oficina Sectoral de Planificación, Plan Nacional de Desarrollo para 1971-75, Vol. VIII, Plan de Educación (reajustado), Lima, June 1972, Table 1-04.

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	7	11	26	-	32	24.0	3.5
a-	23	34	86	-	135	26.0	7.8

s full-time and evening.

955-1965 data: División de Estadística Escolar del Ministerio de Educación Pública y Oficina acional Interuniversitaria de Planificación, as quoted in: OECD, Human resources, education nd economic development in Peru, Paris, 1967, p. 46.

970 data: Peru, Ministerio de Educación, Oficina Sectoral de Planificación, Plan Nacional de esarrollo para 1971-75, Vol. VIII, Plan de Educación (reajustado), Lima, June 1972, Table 1-04.

Table 4. Types of teaching establishments, 1970

Type	Total	Primary	Secondary General	Secondary Technical	Intermediate	Artistic	Teacher training	Artesanal	Skill (Competencia) training	Others
Total General	22 426	20 034	1 451	414	17	28	90	126	167	99
Day	21 388	19 423	1 229	309	12	21	86	87	147	74
Evening	1 038	611	222	105	5	7	4	39	20	25
Total Public	19 261	17 638	959	370	16	26	70	120	-	62
Day	18 369	17 082	773	283	11	20	67	82	-	51
Evening	892	556	186	87	5	6	3	38	-	11
Total Fiscal	858	855	2	-	-	-	-	-	-	1
Day	848	845	2	-	-	-	-	-	-	1
Evening	10	10	-	-	-	-	-	-	-	-
Total Private	1 957	1 302	400	41	1	2	20	3	159	29
Day	1 880	1 287	388	24	1	1	19	3	139	18
Evening	77	15	12	17	-	1	1	-	20	11
Total Municipal	50	22	28	-	-	-	-	-	-	-
Day	34	19	15	-	-	-	-	-	-	-
Evening	16	3	13	-	-	-	-	-	-	-
Total Communal	45	43	2	-	-	-	-	-	-	-
Day	44	42	2	-	-	-	-	-	-	-
Evening	1	1	-	-	-	-	-	-	-	-
Total Parochial	224	165	42	2	-	-	-	3	8	4
Day	193	139	40	1	-	-	-	2	8	3
Evening	31	26	2	1			-	1	-	1
Total Cooperative	31	9	18	1	-	-	-	-	-	3
Day	20	9	9	1	-	-	-	-	-	1
Evening	11	-	9	-	-	-	-	-	-	2

Source: Peru, Ministerio de Educación, Censo Nacional Escolar, 1970, series establecimientos, Vol. I, Lima, 1972.

es of teaching establishments, 1970

	Total	Primary	Secondary General	Secondary Technical	Interme-diate	Artistic	Teacher training	Artesanal	Skill (Competencia) training	Others
	22 426	20 034	1 451	414	17	28	90	126	167	99
	21 388	19 423	1 229	309	12	21	86	87	147	74
	1 038	611	222	105	5	7	4	39	20	25
	19 261	17 638	959	370	16	26	70	120	-	62
	18 369	17 082	773	283	11	20	67	82	-	51
	892	556	186	87	5	6	3	38	-	11
	858	855	2	-	-	-	-	-	-	1
	848	845	2	-	-	-	-	-	-	1
	10	10	-	-	-	-	-	-	-	-
	1 957	1 302	400	41	1	2	20	3	159	29
	1 880	1 287	388	24	1	1	19	3	139	18
	77	15	12	17	-	1	1	-	20	11
al	50	22	28	-	-	-	-	-	-	-
	34	19	15	-	-	-	-	-	-	-
	16	3	13	-	-	-	-	-	-	-
al	45	43	2	-	-	-	-	-	-	-
	44	42	2	-	-	-	-	-	-	-
	1	1	-	-	-	-	-	-	-	-
al	224	165	42	2	-	-	-	3	8	4
	193	139	40	1	-	-	-	2	8	3
	31	26	2	1			-	1	-	1
tive	31	9	18	1	-	-	-	-	-	3
	20	9	9	1	-	-	-	-	-	1
	11	-	9	-	-	-	-	-	-	2

, Ministerio de Educación, Censo Nacional Escolar, 1970, series establecimientos, Vol. I, Lima, 1972.

(iii) Level of education within the population

The observed growth in education has had its effects upon the rate of schooling within the population. These effects can be examined partly as flow relationships - the changing rates of schooling of age-groups and changing participation in adult education and training programmes on the part of other functional groups. They can also be seen as changes in the stock of education, embodied in the population, the literacy rates and other indices of schooling within the population at a given time.

Table 5 shows some indication of the overall increase in schooling in the population of school age or beyond. At the time of the 1961 census virtually half of the population had not passed a single primary school grade, but by 1970 that category had dropped to less than a quarter. Those in the population with some secondary education rose sharply from 7.8 per cent to 17 per cent, and those with some higher education increased from 1 in 66 to 1 in 26.

Table 5. Schooling in population, aged five years and over (in percentages)

	1961	1970
No grade passed	47.8	24.3
Some primary grade passed	42.9	54.9
Some secondary grade passed	7.8	17.0
Some higher education	1.5	3.8
TOTAL	100.0	100.0

Source: Ministry of Education

As Table 6 shows, in 1961 the average amount of schooling (or school life) in the population was less than three grades. Noticeable also were the substantially lower rates of schooling for women, a feature which we shall see was beginning to be corrected during the decade. Regional disparities were also very large. Average length of schooling for the nation was 2.9 years whereas in the Lima area it was 4.8 years, and rates differed significantly among the non-urban areas. Much of the discrepancy

Table 6. Average number of grades passed, census of 1961

Age	Men	Women	Total
5 - 14	1.44	1.32	1.38
14 - 20	4.47	3.57	4.03
20 - 24	4.89	3.48	4.16
15 - 39	4.66	3.24	3.94
15 - 64	4.38	2.92	3.64
TOTAL	3.47	2.39	2.92

Source: Censo Nacional, Lima, 1961.

Table 7. School enrolment ratios (in percentages)

	1951	1955	1960	1965	1967	1970
Enrolment in primary plus secondary, percentage of age 5-19 years [1]	34	33	41	45	-	-
Apparent primary enrolments, percentage of population aged 6-11 [2]	-	-	83.5	96.2	101.4	-
women only	-	-	-	93	101	-
Apparent secondary enrolment, percentage of population aged 12-16 [1]	-	-	-	29	36	-
women only	-	-	-	24	30	-

Source: 1. Unesco, Statistical Yearbook 1969, Paris 1971.
2. Ministry of Education.

that existed among regions seemed to be more the result of uneven possibility of access to an educational system, rather than simply differences in the length of stay within it.[1]

Enrolment ratios increased significantly for the school-age groups. As Table 7 indicates, the rates of primary plus secondary enrolments as a percentage of the school-age population 5 to 19 years old rose, and apparent enrolment ratios, that is the total number enrolled as a percentage of officially designated school-age groups, rose to over 100 per cent.[2] Rates for women were less, but by 1967 also exceeded 100 per cent. It is interesting thus to go one step further and to look at schooling rates by age bracket for the different school levels as shown in Table 8. It is clear that a large part of the effort in schooling at each level was devoted to age-groups outside the normal or officially designated ages for that level. It is clear that with rapid expansion the school system was devoting much of its resources to 'catching up' on education for those delayed or interrupted, or in some cases for repetition of grades in a system that placed considerable emphasis on passing examinations for promotion at each level or grade year. Note, for instance, that although the official age groupings for primary education are from ages 6 to 11, large and increasing proportions of enrolments in primary education are found in the higher age brackets. For instance, ages 12 to 16 are strongly represented in the period from 1960 to 1967, and not insignificant and growing proportions are found in the 17 to 19 years old bracket as well, trends that were true for both men and women. A similar extension and growth in the range of ages being accommodated is seen in secondary education. The picture of the sixties is one of substantial improvement in age-specific enrolment ratios but it is also one of substantial provision of primary and secondary education to somewhat 'over-age' groups.

Although apparent gross enrolment ratios using the official age-group as denominator exaggerate the extent to which a given age-group is being educated, they do give an indication of the extent to which the capacity of the school system is matching the normal age-cohort, an especially significant indicator of school capacity, perhaps, for the long run.

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[1] See, for example, OECD, Human resources, education and economic development in Peru, Paris, 1967, p.39. "At one extreme of the urban agglomeration of Lima has the lowest percentage of uneducated inhabitants (18.4 per cent) and the highest average school life (4.8 years); at the other extreme we have the south-west region where 70.3 per cent of the population have never attended school and the average school life is 1.3 years." Interestingly enough they point out that if the group is excluded which has never had any schooling, the number of school years per person shows much less discrepancy by regions. Only in Lima is it substantially more (5.9 years), and for all of the other regions it lies between 4.2 and 4.8 years.

[2] Apparent enrolment ratios, or as they are sometimes called 'adjusted ratios', show actual enrolments (regardless of age) at a given level of schooling relative to the actual population within the age brackets officially designated for that level of schooling. They can exceed 100 per cent since enrolments often contain 'over-age' children or adults.

Table 8 shows separate data for the sexes, and it is difficult to judge how much progress is being made in a relative sense for women. Their separate percentage rates are up, both in primary and secondary levels, and in normal age and older age brackets, but in each case the male percentages are up just as much or more in percentage points. The period can scarcely be described as one in which women catch up relative to men. For instance, as one crude measure, if we look at the relation of the female to male enrolment ratio for the earlier date compared to a later date, for the age bracket 10 to 11 at the primary level and 15 to 16 at the secondary level, we get no shift at all. In short, the ratio of female to male proportions has remained constant.

The last columns of Table 8 show, for purely illustrative purposes, the comparable percentage enrolments for a country with a long developed educational system. The comparison is interesting, because it shows strikingly the different nature of the challenge to a growing and expanding educational system such as Peru's. Note that in the 'steady state' of the long-developed educational system the age of enrolments is tightly packed with relatively little overlap between primary and secondary levels, a contrast indeed to the requirements and the challenges of a system which we have seen is working with substantial proportions outside the normal age-groups, and doing so because of its recent growth and development. There is a note of optimism in this comparison. Even to hold at its present size the Peruvian system could in time deal with a larger proportion of a cohort-age group. What then are the deficits now in the school-age groups? These can be seen in greater detail in Tables 9 and 10 and Chart 3. The chart also shows a comparison with the middle of the decade under review.

Significant proportions of these age-groups are now being schooled, as Table 9 indicates. Over 80 per cent in ages 8 through 13, age 14 almost 80 per cent, and age 7 almost 75 per cent - these are impressive proportions for a developing country. But we need to note that part of each of these enrolment percentages comes from the 'catching up' process, namely many of the present enrollees are in classes below their normal age. Note for instance in Table 10 and Chart 3 how many of the students in the 11 to 14 age-bracket are enrolled in primary rather than secondary education, and implicitly, how many at any primary age-level may be in lower grades than normal for a matured educational system. This point is made only to underscore the unfinished aspect of high present enrolments, even age-specific enrolments. One feature of the remaining work of qualitative improvement of the school system will necessarily be the relatively greater provision of higher grades to a given age-group. In short, educational development is not just more education, but more delivered to the student on average and sooner. And these requisite trends are detectable in recent Peruvian experience.

Literacy rates are another index of stock of basic educational capital embodied in the population, a feature which confirms the effects of the drop in the proportion of population with little or no schooling. Table 11 shows the results of a recent survey. Low illiteracy rates exist for younger men, and in general, the recent improvement in the provision

Table 8. Age-specific school enrolment ratios[1], 1960 and estimated 1967

	Peru								Long-developed country			
	Primary				Secondary				Primary		Secondary	
	Male		Female		Male		Female			M		F
Age	1960	estim. 1967	1960	estim. 1967	1960	estim. 1967	1960	estim. 1967				
5	7.5	10.5	7.1	9.9	-	-	-	-	9	10	-	-
6	28.8	40.2	27.4	38.3	-	-	-	-	93	94	-	-
7 - 9	56.9	79.5	50.5	70.6	-	-	-	-	99	99	-	-
10 - 11	67.9	94.9	57.2	79.9	0.6	1.0	0.5	0.8	95	94	4	5
12 - 14	59.0	82.5	42.3	59.1	11.0	18.5	9.3	15.6	11	7	88	92
15 - 16	30.4	42.5	16.5	23.1	19.5	32.8	15.0	25.2	-	-	91	88
17 - 19	11.1	15.5	4.8	6.7	14.7	24.7	8.2	13.8	-	-	11	6
20 - 24	1.7	2.4	0.9	1.3	4.0	6.7	1.6	2.7	-	-	-	-
25 - 29	0.5	0.7	0.3	0.4	0.7	1.2	0.3	0.5	-	-	-	-
30 - 34	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.2	-	-	-	-
35 - 39	n.a.[2]	0.1	n.a.	0.1	n.a.	0.2	n.a.	0.2	-	-	-	-

1. Note that this table shows the rate of enrolment of an actual age group regardless of grade. The estimated totals for 1967 appear somewhat below what might be consistent with the 1970 data from the educational census reported in Table 9, but it has the merit of showing the trends in the 1960's and attempting a breakdown by sex.
2. Not available.

Source: U.S. Bureau of the Census, Population of Peru, estimates and projections: 1962 to 2002, Demographic reports for foreign countries, series P-96, No. 4, U.S.G.P.O., Washington D.C., 1971, pp. 23, 26. 1960 data are derived from 1961 census data, 1967 figures are estimated by the International Demographic Statistics Centres, U.S. Bureau of the Census.

Table 9. Enrolments, deficits and enrolment rates, ages 6 to 14, 1970 ('000 persons)[1]

Age	Total population (a)	Enrolments (b)	Deficit (a)-(b)	Percentage enrolled % (b) of (a)
6	411.2	234.0	177.2	56.9
7	400.9	300.3	100.6	74.9
8	391.8	317.1	74.7	80.9
9	383.1	323.1	60.0	84.3
10	360.1	319.2	40.6	88.6
11	362.4	304.4	57.9	84.0
12	351.1	313.1	38.1	89.1
13	334.6	270.4	64.2	80.7
14	318.2	250.2	68.0	78.6
TOTAL	3 313.4	2 631.8	681.6	79.4

1. This table, based on 1970 census of education data, shows enrolment of an age group irrespective of grade or school level. Note that Tables 30 and 40 below separate the data by primary and secondary levels.

Source: Oficina Sectoral de Planificación - Ministerio de Educación, Plan bienal de educación, 1971/72, Lima, June 1971, Tables 2-6, p. 11 with minor corrections from Ministry of Education by correspondence.

Table 10. Enrolment rates for population aged 5 to 24 by level of education, 1970 (enrolments per '000 persons)

Age	Primary			Secondary[1]			Higher[2]			Total		
	Public	Private	Total	Public	Private	Total	Public	Private	Total	Public	Private	Total
5	103	17	120	-	-	-	-	-	-	103	17	120
6	489	80	569	-	-	-	-	-	-	489	80	569
7	643	105	748	-	-	-	-	-	-	643	105	748
8	695	113	808	-	-	-	-	-	-	695	113	808
9	723	120	843	-	-	-	-	-	-	723	120	843
10	760	124	884	-	-	-	-	-	-	760	124	884
11	696	113	809	23	5	28	-	-	-	719	118	837
12	656	108	764	107	8	125	-	-	-	763	126	889
13	505	82	587	187	31	218	-	-	-	692	113	805
14	402	65	467	272	45	317	-	-	-	674	110	784
15	274	45	319	313	48	361	1	-	1	588	93	681
16	189	31	220	299	47	346	4	2	6	492	80	572
17	103	16	119	255	40	295	16	4	20	374	60	434
18	71	12	83	181	28	209	31	8	39	283	48	331
19	55	9	64	129	19	148	40	11	51	224	39	263
20	45	8	53	79	12	91	48	15	63	172	35	207
21	28	6	34	49	7	56	48	13	61	125	26	151
22	9	3	12	40	6	46	40	12	52	89	21	110
23	8	2	10	26	2	30	35	9	44	69	15	84
24	1	-	1	23		25	26	8	34	50	10	60

1. Includes both general and technical secondary schools.
2. Includes both university and 'formación magisterial'.

Source: Oficina Sectoral de Planificación, Ministerio de Educación, Plan Bienal de Educación 1971-1972, Lima, June 1971, Table 2-4, p. 7.

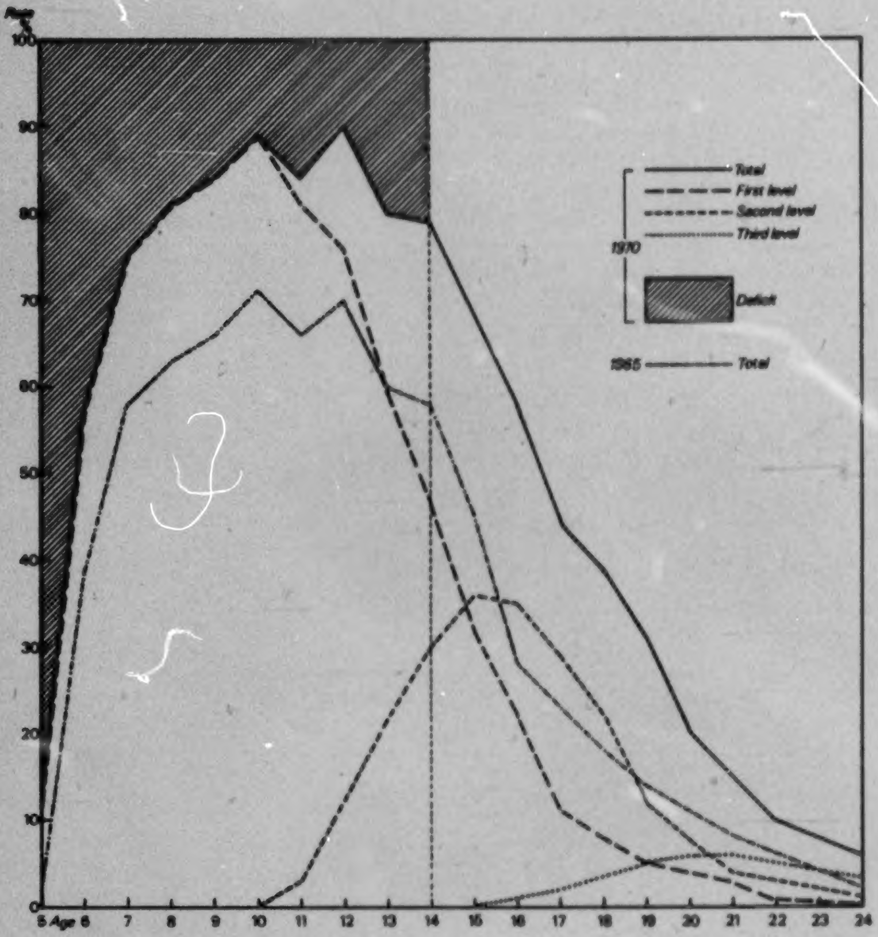

Chart 3. Rates of enrolment of population by age and level of schooling

Table 11. Literacy - illiteracy rates, Peru, 1970

	MEN		WOMEN	
	Literate	Illiterate	Literate	Illiterate
15 - 19	96	4	86	14
20 - 29	94	6	75	35
30 - 39	87	13	62	38
40 - 49	81	19	54	46
50 - 59	77	23	47	53
TOTAL	86	14	64	36

Source: Peru, Ministerio de Educación, Oficina Sectoral de Planificación, El financiamento de los gastos de educación en el Peru, 1960-72, Lima, 1973, for IIEP/Unesco, Part II, p. 9.

Table 12. Teacher force

				Annual growth rate during period shown		
	1960 ('000)	1965 ('000)	1970 ('000)	1960-65 %	1965-70 %	1960-70 %
Primary	38.5	51.1	66.4	5.7	5.4	5.6
Secondary	14.5	22.3	29.5	9.0	5.7	7.4
University	3.5	7.1	10.7	15.1	8.6	11.8

Source: Peru, Ministerio de Educación, Oficina Sectoral de Planificación, El financiamento de los gastos de educación en el Peru, 1960-72, Lima, 1973, Primary, Table II-2; Secondary Table II-8; University, Table II-19.

of basic education can be seen in the age distribution of literacy. Even now, two out of three illiterate persons are women, and in the younger age-groups as well, the differences between men and women are striking; more than three fourths of the illiterates in the age-group 15 to 19 are women. Although there is no precise measurement of illiteracy year by year; Ministry of Education estimates put the reduction in recent years at about two percentage points per year.[1]

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1. Source: Peru, Ministerio de Educación, Oficina Sectoral de Planificación, El financiamento de los gastos de educación en el Peru, 1960-72, Lima, 1973, for IIEP/Unesco.

Table 13. Pupil or student-teacher ratio

	1960 ('000)	1965 ('000)	1970 ('000)
Primary[1]	35.2	37.2	35.2
Secondary[2]	12.1	14.6	18.5
University[3]	8.7	9.1	10.3

1. Maestros, ratio of alumnos to maestros.
2. Maestros, ratio of alumnos to maestros
3. Profesores, ratio of matrícula to profesores.

Source: Peru, Ministerio de Educación, Oficina Sectoral de Planificación, El financiamiento de los gastos de educación en el Perú, 1960-72, Lima, 1973, Primary, Table II-2; Secondary, Table II-8; University, Table II-19.

(iv) Teaching force

The picture already shown of educational growth is reflected as well in overall expansion of the numbers of teachers at the various levels. Table 12 shows the numbers and the growth rates. Comparing teacher growth with our earlier Table 1 portrayal of student enrolment growth some significant trends can be noted. The large primary sector had a somewhat slackened teacher growth rate during the second half of the decade, just as we have noted was true of enrolments, but teachers were growing more rapidly than students in the period 1965-70 and the pupil-teacher ratio dropped significantly, more than 5 per cent fewer pupils per teacher. See for instance Table 13. This trend cannot be completely analysed at the aggregate level, but it is interesting that at the end of the decade the ratio was back at the same level as at the beginning. On the negative side, a fall in the aggregate pupil-teacher ratios could be associated with a rise in unit costs and a decrease in efficiency. However, the spread of schooling regionally, the change in mix of grades offered, the increase in variety of schools, and methods of funding where adult and other programmes have been a major part, may be positive features of development that imply a shifting aggregate ratio, not to mention the unknown degree of sensitivity of quality itself to these ratios. With the substantial increases in enrolments at the secondary and higher levels, the teaching force has grown less rapidly. Particularly at the secondary level, the student-teacher ratio has risen, in fact almost 50 per cent nationwide.[1]

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[1] We discuss these trends by school level in much greater detail in the second half of this chapter. As we shall see by 1972 the student-teacher ratio had doubled to compare to 1960, but we cannot tell whether that increase will continue. See Section B(ii) below.

(v) Expenditure on education

Having observed the overall trends in enrolments and numbers of teachers, and the impact that this has had during the decade on the educational make-up of the society, we now turn to a description of the resources which have been utilized by the educational sector. The trends here show some very interesting features in a period of such strong growth.

Table 14 gives an overview of the trends in both recurrent and capital expenditure, with an estimate for total expenditures in the private sphere. Table 15 enables us to see the same trends after the necessary step of allowing for inflation. We will see in Chapter IV that G. D. P., as a measure of total economic activity, has grown in real terms virtually throughout the decade, with a period of slackened performance in 1967-69. In the decade, total expenditures of the public sector rose strongly and kept rising even relative to G. D. P. But public expenditure on education rose relative to all public expenditure and then fell again, in fact to a proportion somewhat less in 1970 than it had been in 1960. It also rose and fell back again relative to G. D. P. The component of such educational expenditure representing capital expenditures swung more powerfully than recurrent expenditures, reflecting the familiar 'capital accelerator' process in educational growth. That is, as student numbers and their attending recurrent expenditures grow, new investment becomes related to the growth in numbers, and as the increase in students slackens off, i. e., stops growing, the rate of capital spending drops off absolutely. Tables 16 and 17 which show some of the variables on a year by year basis illustrate these tendencies. Chart 4 particularly shows the relationship between current and capital expenditures.[1]

Tables 15 and 17 eliminate the inflation factor in each case. The results are striking. In the first half of the decade total public expenditure on education increased two and a half times in real terms, but from 1965 to 1970, the second half, even though the current soles expenditures rose from 5. 8 to 9. 3 thousand million soles, our deflation factor would suggest for that period a drop in real terms of about 7 per cent.

For the period up to 1970, Table 15 shows that expenditures probably fell in the private sector as well, perhaps by about the same percentage.[2] This real fall, or levelling-out of expenditures over a half decade, came in spite of some rise in real terms of both public expenditures as a whole and G. D. P. itself. It is clear that public expenditures

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1. Although Chart 4 illustrates the considerable extent of an accelerator effect on capital expenditures, it must be pointed out that capital expenditures in any given year are the result of discretionary policies. Capital expenditures fell both in 1961 and in 1965 against continuing rise in current expenditures.
2. Evidence from private sector is estimated by official sources but not generally believed to be highly accurate.

Table 14. Expenditures on education (current S/'000,000)

	1960	1965	1970
1. Gross Domestic Product	56 909.0	114 902.0	236 246.0
2. Total public sector expenditures	7 412.6	22 859.7	48 660.0
3. Public sector expenditures on education	1 488.1	5 859.7	9 331.4[1]
3.1 Current	1 443.1	5 463.3	8 957.0[1]
- salaries	1 202.0	3 897.9	6 908.3
- non-personnel	34.0	156.7	462.7
- transfers	207.1	1 408.7	1 586.0
3.2 Capital	45.0	396.4	374.4[1]
- construction	40.5	324.0	276.5
- equipment	4.5	72.4	97.9
4. Private sector expenditures[2]	279.5	741.8	1 168.3
5. Public sector expenditures as % of G.D.P. 2/1	13.0%	19.9%	20.1%
6. Education expenditures as % of G.D.P. (4+3)/1	3.1%	5.7%	4.4%
7. Public education expenditure as % of public sector expenditure 3/2	20.1%	25.6%	19.2%
8. Education capital expenditures as % of public sector total educational expenditure 3.2/3	3.0%	6.8%	4.0%

1. 1970 Plan Bienal de Educación, 1971-72 (adjusted 1971).
2. Estimated, see footnote 2, p. 36.

Source: Data: Peru, Ministerio de Educación, Estadísticas básicas series históricas, Tables VII and VIII, Lima, August 1972; 1960 Cuenta General de la República and Instituto Nacional de Planificación; 1965 Cuenta General de la República and Banco Central de Reserva. Percentage calculations: IIEP.

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Percentage calculations: IIEP.

Table 15. Indices of real expenditure on education, 1960 = 100[1]

	1960	1965	1970	1960-65	1965-70	1960-70
	(Indices)			Annual growth rates during period shown (Percentages)		
1. Gross Domestic Product	100	138	167	6.7	3.9	5.3
2. Total public sector expenditures	100	210	263	16.0	4.6	10.0
3. Total expenditure on education	100	256	238	20.6	- 1.5	9.1
3.1 Public sector	100	270	251	22.0	- 1.5	9.6
(a) Current	100	257	247	20.6	- 0.4	9.5
Salaries	100	220	229	17.3	0.8	8.7
Non-personnel	100	312	542	25.5	11.7	18.0
Transfers	100	462	305	36.0	- 7.9	11.8
(b) Capital	100	720	394	48.4	-11.5	14.7
Construction	100	653	322	45.6	-13.0	12.4
Equipment	100	1 302	1 030	67.1	- 4.5	26.4
3.2 Private sector	100	181	167	12.6	- 1.4	5.3

1. Indices are computed from expenditures reported there in constant 1963 soles, calculated on the basis of implicit deflators. See Appendix I - Table VII.

Source: IIEP from data of Table 14, deflated.

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are computed from expenditures reported there in constant 1963 soles, calculated on the basis of deflators. See Appendix I - Table VII.

P from data of Table 14, deflated.

Table 16. Proportion of public educational expenditures in total Central Government budget (S/.'000,000)

	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972
Total Central Government budget	8 116.9	10 353.8	11 941.3	14 612.9	16 185.5	19 91[illegible].2	23 784.1	27 570.3	28 689.9	35 300.3	43 363.7	49 062.1	59 964.7
Current expenditures: education sector	1 438.9	1 759.4	2 268.7	2 795.8	3 394.9	5 370.6	6 963.5	7 745.6	7 227.7	7 971.6	8 752.0	9 501.0	12 265.3
Capital expenditures: education sector	49.3	167.5	106.6	103.4	204.0	360.7	191.0	122.7	68.9	72.1	274.9	335.8	541.4
Total educ:sector	1 488.2	1 926.9	2 375.3	2 899.2	3 5[illegible]8.9	5 731.3	7 154.5	7 868.3	7 296.6	8 043.7	9 026.9	9 836.8	12 806.7
% of budget	18.33	18.61	19.89	19.84	22.23	28.77	30.00	28.54	25.38	22.79	20.82	20.05	21.36

Source: Peru, Ministerio de Educación Oficina Sectoral de Planificación; El Financiamento de los Gastos de Educación en el Peru, 1960-72, Lima, 1973, for IIEP/Unesco, Tables III. 22-Table II. 23.

Table 17. Public educational expenditures in constant value terms (S/'000,000 1970)

	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970
Current expenditures	3 280	3 820	4 777	5 676	6 276	8 5[illegible]4	10 155	10 291	8 066	8 372	8 752
Index 1960 = 100	100	116	146	173	191	26[illegible]	310	314	246	255	267
Capital expenditures	113	364	224	210	377	571	279	163	77	76	275
Index 1960 = 100	100	322	198	186	334	505	247	144	68	67	243

Source: Data of Table 16 above deflated by IIEP, using deflator of Appendix I, Table VII.

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	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972
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ditures:													
tor	1 438.9	1 759.4	2 268.7	2 795.8	3 394.9	5 370.6	6 963.5	7 745.6	7 227.7	7 971.6	8 752.0	9 501.0	12 265.3
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	16.33	18.61	19.89	19.84	22.23	26.77	30.00	28.54	25.38	22.79	20.82	20.05	21.36

Ministerio de Educación Oficina Sectoral de Planificación; El Financiamento de los Gastos de Educación en el Peru, 72, Lima, 1973, for IIEP/Unesco, Tables III.22-Table II.23.

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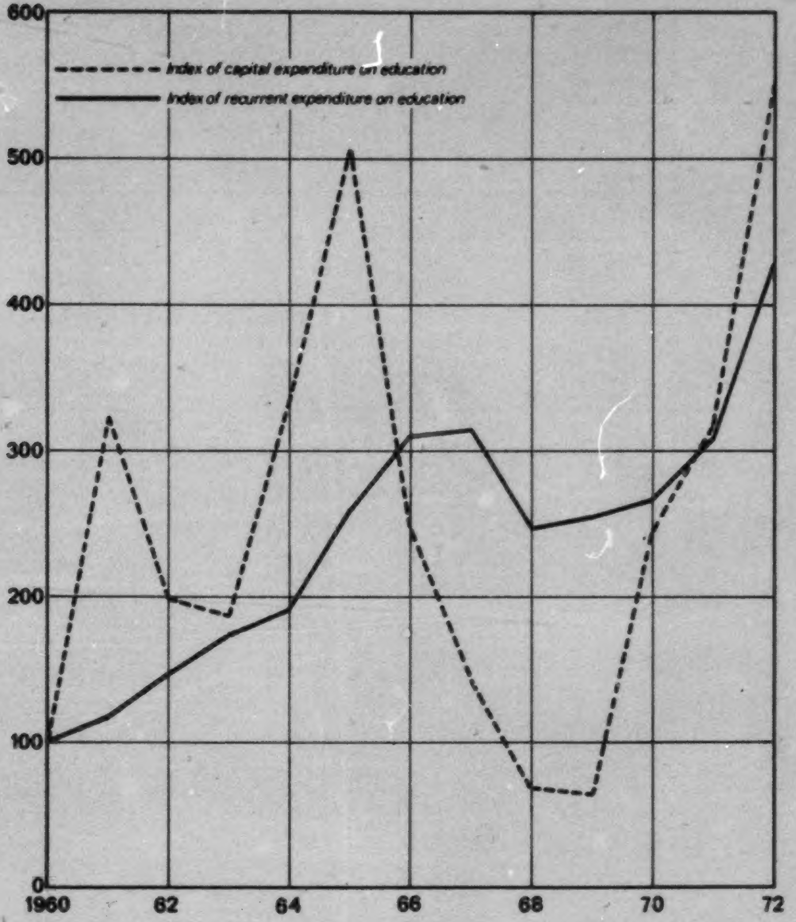

Source: Deflated expenditure data of Table 17.

Chart 4. Indices of educational expenditure (1960=100: 1970 soles data) were being directed increasingly elsewhere and that the earlier rapid rise in the educational sector had yielded somewhat to other budget priorities. By our calculations, the salary component as a whole did not actually fall, nor did non-personnel current costs. But both transfers and especially capital expenditures dropped enough that the total fell after adjustment for inflation. This illustrates negative deceleration of investment requirements as expansion slowed down. Since we have already noted that the teaching force, the number of teachers, grew at all levels during both halves of the decade it is clear that real compensation per teacher fell.[1] As we shall see, in the period to 1972, expenditures were to resume their rapid growth and both current and capital spending would rise to record levels.

One interesting question that may be raised at this stage of the analysis, is whether the trends of teacher compensation were best managed over the decade as a whole. A rapid growth in teacher requirements was followed by new recruitments and very substantial increases in salaries in the mid-sixties. In 1965-66, these increases were of the order of 75 per cent over two years. Subsequent increases that had been promised could not be provided in the period of economic crisis that ensued. In fact periods followed of freeze on teacher salaries, or of increases which did not fully compensate for the continuing rate of inflation. Consequently the period as a whole contained substantial gyrations in the real rewards of entering the teaching profession. The earlier high increases probably added to the demand to enter the profession and helped to create a subsequent over-supply of teachers just at a time when the real rates of pay and the need for new teachers were moderating. Disequilibrating phenomena like these are by no means confined to Peru. A variant of the same 'cobweb' effects in teacher and other labour markets, e.g. engineers, where entrants must prepare over a long period of time, can be observed in the recent experience of highly economically advanced countries. But as a lesson from the recent past, and from other areas, authorities should take advantage of any opportunities that might exist to use salary and other manpower allocating policies to encourage appropriate numbers of professional people to enter a given field, and to act as a positive factor for incentive and performance, and swings in salary levels sharply in either direction act against such controls. To be sure, a part of the virtual stagnation in real terms of the total level of the national salary bill during the last half of the decade was partially accompanied as we shall see by a rise in the proportions of younger, and thus naturally lower-paid teachers, but many individual teachers must have been subjected to substantial shifts in their economic position, both up and down, during the decade.[2]

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[1] Further detail on expenditures for the educational system as a whole can be found in Appendix II, especially Tables I through V.

[2] There is a further discussion of salary history and policy in Chapter VI.

As might be expected, the allocation of public expenditures on education shifted among the various levels and branches. The primary education share dropped sixteen percentage points from 58 per cent to 42 per cent. As Table I, Appendix II shows, most other categories rose, particularly the significant higher education sector and the small but rapidly growing out-of-school programme. It is interesting that, in spite of the heavy enrolment increases and the growing relative size of the secondary level, its budgetary proportion did not increase. This may be partly a function of the substantial (50 per cent) rise in student-teacher ratios we have already observed (see above, page 35).

(vi) Capital expenditures

We have already noted the extent to which capital expenditures have fluctuated during the period reviewed. Table 18 shows the constant value soles equivalent of these expenditures, and their proportion of all educational expenditures. Investment peaked at just over 6 per cent of all educational outlays in 1965 and began an absolute and relative decline to very low levels in the years 1968 and 1969 (see also Chart 4). Aside from the trends, the question of the general size of material and investment expenditures relative to labour costs has been raised throughout the period. For the period as a whole the material costs have been a small proportion by international standards. It has been observed that the budgetary and financing process itself gave so much priority to salary expense that material provisions were perhaps a neglected residual expense. Ideally, in the educational process, just as in other service sectors such as health or transport, a balance should be struck between labour or human costs on the one hand and the appropriate provision of capital and current material costs on the other, a balance which represents the best productivity of the resources taken as a whole.

One of the reasons these questions have been of importance during the period of the sixties is that such survey evidence and observations as were available often confirmed shortages, sometimes severe of permanent buildings and classroom materials. Considering the growth in numbers of pupils and students, it is clear that part of the emphasis on quality of education will involve continuing concern with better provision of the critical material inputs.[1]

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[1] It might be argued from an economic point of view that heavy emphasis on labour inputs is especially apt in a developing country because these are available at low opportunity cost in a surplus labour economy. But many material inputs, particularly buildings are provided under similar if not more favourable conditions from the point of view of opportunity cost, and the costs of preparing large numbers of teachers are perhaps not without significant opportunity value.

Table 18. Capital expenditures (1970 S/.'000,000 and percentages)

	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970
Capital expenditures	113	364	224	210	377	571	279	163	77	76	275
Index	100	322	198	186	334	505	247	144	68	67	243
All public education expenditure	3 393	4 184	5 001	5 886	6 653	9 095	10 434	10 454	8 143	8 448	9 027
Capital expenditure as percentage of all public education expenditures	3.3	8.7	4.5	3.6	5.7	6.3	2.7	1.6	0.9	0.9	3.0

Source: Data are from Table 17 above, adjusted for inflation.

One of the reasons for failure to provide adequate investment was the budgeting process. Especially after the Organic Law of 1963 on functional budgeting, a long process of improvement was begun. Whereas previously programmed and planned investment expenditures had taken second place to the exigencies of passing the annual budgets, the purposes of budgetary reform were to form a stronger link between purposeful planning and enactment, to standardize educational services and the classifications of expenditure items, and generally to improve the statement and review of a budget which in a highly-centralized organisation emanates from the needs of literally thousands of individual units. Part of the challenge of better budgeting included the need for new coding systems for knowing and thus controlling permanent staff and preventing the creation of excess posts.[1] With the process of gradually beginning some degree of decentralization of administration, recognition was also being given to the inefficiencies and the costs of congestion that result from excessive centralization of a large and complex system, and to the attempt to achieve a better balance between the advantages of central and regionalized administration.

(vii) Population factors

The advances in public health during the past several decades have had effects upon the rates of population growth in Peru similar to those in other developing countries. The bearing which the population factor has on the requirements of schooling is powerful and direct, and presents a major challenge to available resources particularly where the goals are ultimately to improve per capita opportunities in the economic and social system. To analyse this factor it is instructive to look at somewhat earlier trends as well as the recent decade. Table 19 shows the strong drop in the crude death rate from the forties until 1960 and then continuing in each year of the sixties. Important advances in reduction of epidemic diseases, improved sanitation, better water supply and better health care, particularly maternity and post-natal care, have all contributed to this reduction by one-half in the crude death rates. Crude birth rates have not followed the same pattern, and may in fact have been increasing during part of the period. Even 'standardizing' these data to allow for the portion of the female population in the child-bearing ages, does not show any substantial drop in crude birth rates, although some very modest drop may be in evidence during the last half of the decade. The net result has been

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[1] For a discussion of these problems, which involved Peruvian as well as international observers, see for example, OECD, Human resources, education and economic development in Peru, Paris, 1967, pp. 100-110. In 1973, a new centralized, computer-run payroll system was installed in Lima to service the entire educational system. Aside from earlier problems associated with starting up such a system, it is hoped it will aid in control of budgeting and payments.

Table 19 Estimated population variables (per 1,000 persons)

	Crude birth rate	Crude death rate	Rate of natural increase
1940-44	46.2	28.8	15.7
1945-49	46.9	24.7	20.2
1950-54	48.0	22.4	23.1
1955-59	49.0	18.6	27.6
1962	46.5	17.0	29.4
1963	45.8	16.4	29.4
1964	45.3	15.8	29.5
1965	44.8	15.2	29.6
1966	44.2	14.5	29.7
1967	43.7	13.9	29.8

Source: U.S. Bureau of the Census, Population of Peru, estimates and projections : 1962 to 2002, Demographic Reports for Foreign Countries, Series P-96, No. 4, U.S. G.P.O., Washington D.C., 1971, p.7. Data 1940-59 show 'standardized' crude birth rates, the work of O.A. Oliver, which take into account the shifts in age structure of women in child-bearing years. Data of the 1960's are estimated by U.S. Bureau of Census. Both estimated death and birth rates exceed 'reported' rates to account for under-registration of vital events.

a substantial growth in the natural rate of increase, a trend which has not been offset powerfully by other factors such as migration. Thus the trends in total population closely reflect the factors in the rate of natural increase, and place Peru among the highest population growth rate countries in the world.

Trends during the decade are difficult to follow precisely since later data are calculated from the census of 1961 without the benefit of subsequent nationwide surveys[1], but Table 20 shows available estimates of the trends. These indicate a very slight drop in the rate of increase in pre-school and beginning-school ages. In the late 1960's there was a surge in the groups at the beginning secondary school age and of university age which no doubt helped to sustain the strong increases in enrolments experienced at those levels.

There is no noticeable shift in growth rates for the population as a whole, which is estimated to have settled at about 3.1 per cent per annum during the decade. It is possible that the somewhat smaller

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[1] A census was taken in 1972, results of which are not yet published.

Table 20. Population by age ('000)

	1960	1960 structure %	1965	1970	1970 structure %	5-year growth[1]	
						1960-65	1965-70
Total population	10 024.6	100.0	11 646.8	13 578.8	100.0	1.1618	1.1658
of which economically active	3 161.5	31.5	3 654.7	4 268.7	31.4	1.1560	1.1680
By age:							
less than 5	1 824.0	18.2	2 084.9	2 365.2	17.4	1.1430	1.1344
5 - 9	1 427.1	14.2	1 743.6	2 012.4	14.8	1.2217	1.1541
10 - 14	1 215.0	12.1	1 408.9	1 726.4	12.7	1.1595	1.2253
15 - 19	1 005.2	10.0	1 198.1	1 393.4	10.3	1.1919	1.1630
20 - 24	854.7	8.5	984.6	1 178.6	8.7	1.1519	1.1970
25 and over	3 698.6	36.9	4 226.7	4 902.8	36.1	1.1427	1.1599
Births per 1,000	44.9		44.9	43.5		1.0000	0.9688

1. Simple ratio of last year to first year of period indicated.

Source: Boletín de Análisis Demográfico - Año 1967 - ONEC.

growth rates in the less-than-five age group may portend a slight slackening in the rate of increase of the age group entering the school system, but even in the late sixties this age group was growing in excess of 2.5 per cent. We examine these factors in further detail in the section below on educational projections.

Population growth poses complex challenges for both economic and educational development. The relationship of population to resources is part of the question. In Peru although the land area is large we have noted that the cultivable portion is limited, and expansion of agriculture has not been easy in recent years. This is partly because the agricultural sector is peculiarly dependent upon the provision of capital and manufactured inputs such as those for irrigation if expansion is to proceed. The option of extension or replication of existing agriculture into virgin land is not available indefinitely to new population. But aside from the question of ratios of population to the resource base, the degree of population growth strongly affects the capacity of any given generation to deepen and strengthen the per capita provision of capital resources, including the important human capital provisions of education. It is the deepening of these resources, the increase of capital (including education) per person that represents an important dimension of economic development.

We can illustrate this latter point by referring to economic variables from the later section of this analysis. If Peruvian G. D. P. can grow at 5.5 per cent per annum and we make a very modest capital-output coefficient requirement assumption of 3.0 - that is that new income must be matched by net additions to the capital stock of three times income growth, then 16.5 per cent of current G. D. P. would be necessary as net capital formation to equip, i. e. to 'capitalize' the growth rate. If the population growth rate runs at 3.1 per cent, then roughly 55 per cent of the capacity to save (more allowing for capital depreciation) or about 9 per cent of current G. D. P. is absorbed by the capital extension requirements of population growth. By similar calculations, if we take from Chapter V below our minimum growth rate for G. D. P. of 4.5 per cent per annum, 69 per cent of the capacity to save or about 11 per cent of G. D. P. is required for the needs of capital extension to new population. The residual amount available to deepen capital per worker would under these assumptions be between merely a half and a third of current capacity for net capital formation. Analogously (and if we view education as investment in human capital it is more than an analogy), the fraction of educational resources which is available for deepening or lengthening the educational process per person is a residual, namely what is available after the extension requirements of population growth. It is interesting that this aspect of the population question is independent of relationship of population to land area or resource base. It represents a demand of population growth on the development process itself.

With a present population of 14 000 000, and even if one were to assume substantially lower growth rates than now exist, Peru would have in the next decades of her economic development a population in excess of many countries with high income standards - for instance, Canada, the entire Scandinavian peninsula, many eastern European countries, etc. Population per se, as a potential market for a substantially industrialized nation would not appear to be a limiting factor, given other national experience.[1] The complexity of the population question is beginning to be recognized in Peru and other developing countries, but during the sixties there was little in the way of specific programmes of family planning or public education, certainly none which would have had significant effects on fertility rates.

(viii) Retention and repetition rates

Little detailed information is available for the trends during the past ten years concerning school retention rates. We have noted above the matriculation and enrolment rates by age and level, but the picture shown there is the composite result of varying patterns of schooling for individual students. Much of the spread in ages observable in Table 8 above, for example, is a function of late starting, repeating, attrition and restarting. Although in the 'steady state' of an already developed system, such anomalies may be thought of as indicators of direct inefficiencies of the educational process, little enough is yet known of the extent to which such patterns constitute educational inefficiency in a system which is rapidly developing against a backlog of deficits in the provision of educational opportunity. Although there is growing agreement that education not carried to the point of effective and retained literacy may involve wastage, there is little evidence on whether each additional bit of education is subject to increasing, constant, or decreasing returns in terms of individual and social benefit, particularly where irregular patterns are being followed. Although an analysis of these problems for Peru is not possible here, overall trends exhibited in retention rates are an important dimension of educational change.

Table 21 provides a picture of how gross retention rates have increased over the 15 years prior to 1965. Such rates, illustrating the relationship between enrolments in the first year for a level of schooling and those in each subsequent year, do change markedly in Peru for this period. To a substantial extent the weight of effort has shifted in the direction of the upper classes. Shifts in the proportional position of the last years of both primary and secondary programmes are particularly marked and these developments must be accounted for in projecting future trends.

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1. We have noted above that after the industrialization of the past decade, further increases in the market for locally produced goods seem to be more a function of rising income per family than of numbers of family units, effective demand being determined by the spread of medium-level incomes.

Table 21. Gross retention rates[1]

Grade Year	Transition	1st	2nd	3rd	4th	5th
Primary, Public, Full-time only						
1951	100.0					
1952	100.0	53.3				
1953	100.0	53.6	41.7			
1954	100.0	55.7	42.2	32.3		
1955	100.0	57.1	42.8	31.7	22.9	
1956	100.0	60.9	47.0	34.7	23.9	17.6
1957	100.0	57.8	48.2	37.2	25.5	18.5
1958	100.0	60.0	46.3	38.7	27.9	20.0
1959	100.0	61.8	48.4	37.8	30.3	22.4
1960	100.0	60.8	48.7	39.5	29.9	23.8
1961	100.0	61.3	47.7	39.7	31.2	23.3
1962	100.0	63.7	48.7	40.2	32.2	25.1
1963	100.0	69.5	51.4	42.9	34.0	27.0
1964	100.0	69.5	57.2	49.5	38.1	29.1
1965	100.0	64.1	55.3	52.1	41.3	31.4
Secondary General, Public, Full-time only						
1951		100.0				
1952		100.0	72.5			
1953		100.0	66.5	64.3		
1954		100.0	77.2	59.0	61.2	
1955		100.0	71.3	64.2	49.3	48.0
1956		100.0	76.4	62.3	59.0	41.8
1957		100.0	79.1	71.1	59.6	51.4
1958		100.0	87.0	73.7	69.1	52.4
1959		100.0	94.1	81.2	73.2	61.6
1960		100.0	89.0	83.4	77.0	64.4
1961		100.0	90.5	87.0	83.0	58.1
1962		100.0	90.5	79.2	74.4	65.5
1963		100.0	79.0	75.1	65.1	60.4
1964		100.0	98.0	84.0	71.4	62.4
1965		100.0	83.1	94.3	76.0	63.2

1. Enrolments for each grade and year as a percentage of numbers enrolling in first year.

Source: Ministerio de Educación Pública - División de Estadística Educativa.

Evidence on the causes of attrition is fragmentary and has only recently been under closer scrutiny, especially as the goals of universal compulsory education are increasingly emphasized. Some survey data from 1963 on the causes of attrition suggested that the most frequently cited reasons were economic factors such as limits on available family assistance (about 50 per cent), the need to work, sickness and change of domicile (each between 12 and 15 per cent) and various responses concerning availability of course offerings and other reasons.

Tables 22 and 23 isolate the repetition factor for 1970 from detailed data that are now available for that year. Rates of repetition are high at most levels and at the primary level account for almost one-sixth of total enrolments. One policy question that has recently been raised is whether methods of promotion are best adapted to total educational goals of the country. With primary repetition rates at these high levels any educationally valid improvement has the potential of adding considerable 'capacity' to the educational system.

Repetition rates are lower at the higher grades of each school level, something which appears true both for day (regular) and night (laboral) programmes. (An exception is the first three years of primary evening school which also show lower rates.) Such evidence would be consistent with the hypothesis that difficulty in adaptation to the schooling process itself is a cause of repetition - that schooling is selective as well as educative. The new reform, as we shall see, attempts to speak directly to this question.

Table 22. Representative public school repetition rates, 1970 ('000 persons, percentages)

	Public primary	Public secondary general	Public secondary technical [1]	Teacher training
Enrolments	2 211	443	122	14.8
Repetitions	364	41	9	0.4
Rate (%)	16.5	9.3	7.0	2.4

1. Public technical, comprising agricultural, commerce and industrial courses.

Source: Peru, Ministerio de Educación, Estadísticas básicas series históricas, Lima, August 1972; Enrolments, Table II; Repetitions, Tables 31-34.

Table 23. Repetition rates by grade, 1970 (Public + Private)

	Day only			Night only		
Grades	Repetitions ('000)	Enrolments ('000)	Repetition rate (%)	Repetitions ('000)	Enrolments ('000)	Repetition rate (%)
Primary						
Transition	166.9	659.0	25.3	1.3	22.0	5.9
1st	87.7	464.5	18.9	1.6	20.8	7.7
2nd	49.7	371.3	13.4	1.7	19.9	8.5
3rd	42.7	336.2	12.7	2.0	22.3	9.0
4th	27.5	279.6	9.8	1.9	24.1	7.9
5th	13.4	230.5	5.8	1.4	22.6	6.2
6th	-	-	-	0.8	15.6	5.1
Total	387.9	2 341.1	16.6	10.7	147.3	7.3
Secondary General						
1st	16.34	167.4	9.8	2.24	24.8	9.0
2nd	10.23	123.6	8.3	1.76	20.3	8.7
3rd	8.12	102.5	7.9	1.31	17.1	7.7
4th	5.03	84.7	5.9	0.90	14.0	6.4
5th	1.75	67.9	2.6	0.49	10.7	4.6
6th	-	-	-	0.18	7.6	2.4
Total	41.47	546.0	7.6	6.87	94.3	7.3

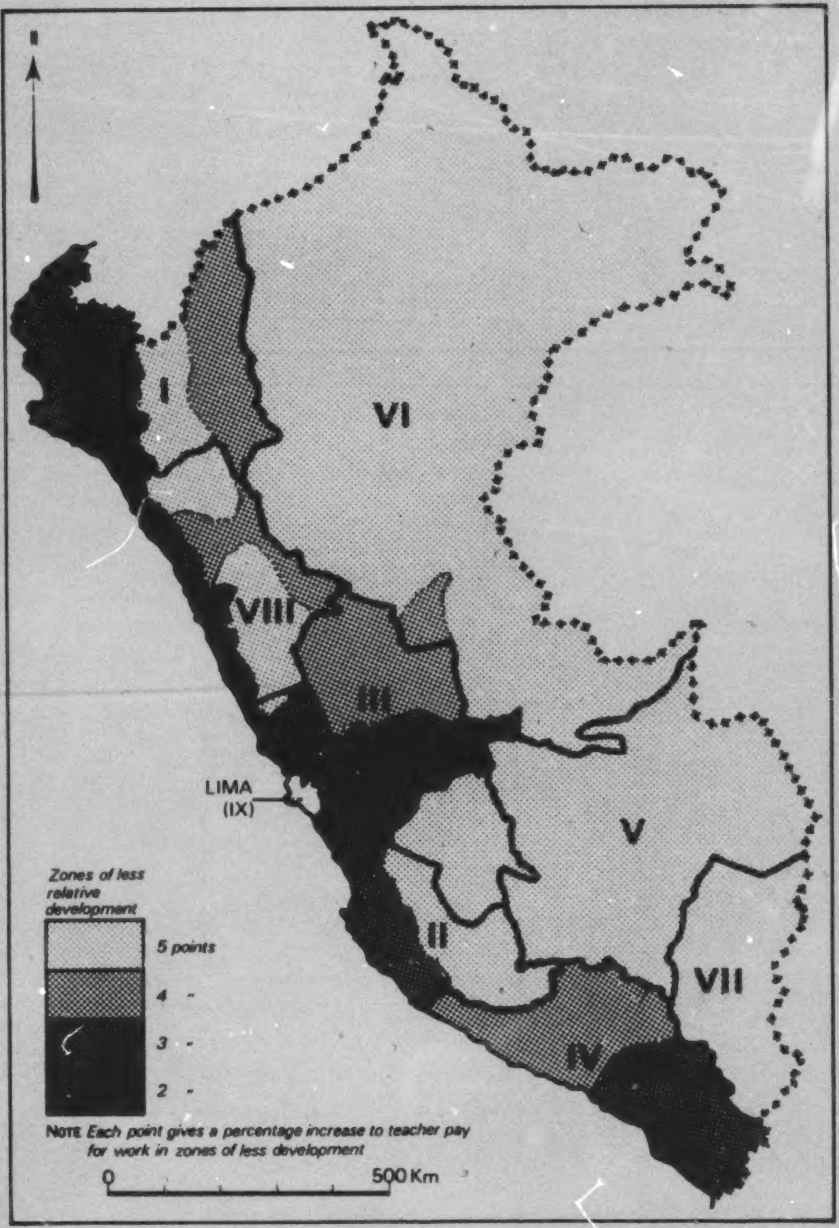
Source: Data from Peru, Ministerio de Educación, Estadísticas básicas series históricas, Lima, August 1972, Repetitions Tables 31-32; Enrolments, Tables 2, 3.

(ix) Geographical dispersion, the educational regions

The geographical complexity of the country is reflected in the regional dispersion of its school system. Although much of the analysis of this study deals with total data aggregated at the national level, it is necessary to bear in mind these regional differences. Recent legislation, part of a move toward decentralization of school administration, has divided the country into nine educational regions, one comprising the Lima metropolitan area and the others dividing the country as shown in Map 1. Each region is composed of several administrative zones (not shown in the map), thirty-three in total. The zones represent a level of administration above the individual schools. These descriptive units are also incorporated in the educational census of 1970 and form a basis by which to examine some of the geographic trends. Aside from the urban colossus of Lima, which includes relatively little non-urban area around it, the regions are neither entirely rural nor urban in character, but have been formed out of departmental capitals and other smaller cities included with both more and less densely populated areas. Each includes some urban and some rural or remote areas. Each has between 8 per cent and 15 per cent of the national population, except for Lima, which contains over 20 per cent. (See Table 24 for population and the characteristics of the regions.)

Although the regional picture by itself does not give a perfect urban-rural breakdown, the fact that the regions differ from one another gives us a chance to observe the variety of educational patterns that exist within the country. Using regional figures, the percentage of the population which is economically active varies from about 25 per cent in the large oriente region at the headwaters of the Amazon, to 30-35 per cent in the southern and coastal areas and Lima. There are significant regional contrasts in enrolment ratios relative to the normal age population group as can be observed in Table 24. The regional ranking of enrolment ratios in Table 25 shows the contrasts even more strikingly. Pre-school enrolment ratios go from 8 per cent to 27 per cent, a long distance from the future targets of 50 per cent. Primary ratios run from 90 per cent to 138 per cent, showing the extent to which it is particularly in the urban (or more urbanized) areas that present primary capacity is devoted to over-age enrolments, and in fact that these students presently exceed the number of normal age cohorts. That is true for about five regions comprising about half the population, and in the others, primary schooling is still less than the normal age numbers. This gives some indication of the extent to which universal primary education is still unachieved. Secondary enrolment ratios range from 18.7 per cent in the southeasternmost region to over 60 per cent on the southern coast to over 90 per cent in Lima according to the 1970 educational census.

The census classifies primary shools as either 'urban' or 'rural' establishments. Using this as a criterion for the urban or rural character of the various educational regions, we can see the geographic variety that exists in the first column of Table 25. Although the


VI
I
VIII
III
LIMA (IX)
V
II
VII
IV
Zones of less relative development
5 points
4 -
3 -
2 -
NOTE Each point gives a percentage increase to teacher pay for work in zones of less development
0
500 Km

Map 1. Designated educational regions, 1970 educational census, and designated zones of less related development

Table 24. Regional enrolments, ratios 1970 (population ÷ enrolments '000)

Region	Total regional population (1a)	Regional % of total population (1b)	Population economically active (2)	Economically active ratio (2) % of (1) (3)	Population 5 yrs.-old (4)	Pre-school enrolment (5)	Apparent Pre-school enrolment ratio (5) % of (4) (6)
Total Peru	13 579	100.0	4 269	31.4	425.3	74.31	17.5
1	2 105	15.6	589	28.0	72.9	7.53	10.3
2	1 127	8.3	344	30,5	35,3	6,57	18,7
3	1 969	14.5	604	30.7	62.3	9.34	14.9
4	679	5.0	252	37.1	19.7	5.32	26.9
5	1 181	8.7	394	33.4	33.1	4.50	13.6
6	720	5.3	182	25,2	25.7	6.14	23.7
7	896	6.6	307	34.2	29.5	2.52	8,4
8	2 132	15.7	610	28.6	68.5	11.04	16.0
9 Lima-metro.	2 770	20.2	987	35.6	78.3	21.32	27.2

ional enrolments, ratios 197[illegible] (population + enrolments '000)

	Total regional population (1a)	Regional % of total population (1b)	Population economically active (2)	Economically active ratio (2) % of (1) (3)	Population 5 yrs.-old (4)	Pre-school enrolment (5)	Apparent Pre-school enrolment ratio (5) % of (4) (6)
	13 579	100.0	4 269	31.4	425.3	74.31	17.5
	2 105	15.6	589	28.0	72.9	7.53	10.3
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	896	6.6	307	34.2	29.5	2.52	8.4
	2 132	15.7	610	28.6	68.5	11.04	16.0
o.	2 770	20.2	987	35.6	78.3	21.32	27.2

Table 24. (continued)

Region	Estimated population 6-11 yrs. (7)	Primary enrolment (8)	Appar. primary enrolment ratio (8) % of (7) (9)	Estimated population 12-16 yrs. (10)	Secondary General enrolments (11)	Appar. secondary general enrol. ratios (11) % of (10) (12)	Secondary technical enrolments (13)	Appar. secondary technical enrol. ratios (13) % of (10) (14)	Total second. enrolments (15)	App. total secondary enr. ratio (15) % of (10) (16)
Total Peru	2 332	2 488	106.7	1 570	547.0	34.8	127.5	8.11	808.7	51.5
1	385	353	91.7	255	62.8	24.6	15.7	6.16	78.5	30.7
2	209	211	101.0	142	47.6	33.5	8.1	5.69	55.7	39.2
3	341	343	100.6	228	55.2	24.2	13.4	5.88	68.6	30.0
4	114	141	123.7	79.8	42.6	53.3	5.4	6.74	48.0	60.1
5	189	185	97.9	123	24.1	19.5	5.7	4.60	29.8	24.2
6	139	161	115.8	90.0	19.6	21.8	5.0	5.57	24.6	27.3
7	151	136	90.0	99.7	13.4	13.4	5.3	5.31	18.7	18.7
8	377	369	97.9	253	81.6	32.2	11.1	4.37	92.7	36.6
9 Lima-metro	425	590	138.8	300	213.7	71.2	57.8	19.25	271.5	90.5

Source: Data are from Peru, Ministerio de Educación, Estadísticas básicas series históricas, Lima, August 1972; columns shown above from respective tables as follows:
(1) 31, (2) 30, (4) 32, (5) 49, (7) calculated at IIEP from age-population data in U.S. Bureau of the Census, Population of Peru, estimates and projections: 1962 to 2002, Demographic reports for foreign countries, Series P-96, No. 4, U.S.G.P.O., Washington D.C., 1971, Table 2 and this source, Table 33, (8) 50 + 51, (10) same as (7) and this source, Table 34, (11) 52 + 53, (13) 54 + 55, (15) is (11) + (13).

ntinued)

	Estimated population 6-11 yrs. (7)	Primary enrolment (8)	Appar. primary enrolment ratio (8) % of (7) (9)	Estimated population 12-16 yrs. (10)	Secondary General enrolments (11)	Appar. secondary general enrol. ratios (11) % of (10) (12)	Secondary technical enrolments (13)	Appar. secondary technical enrol. ratios (13) % of (10) (14)	Total second. enrolments (15)	App. total secondary enr. ratio (15) % of (10) (16)
	2 332	2 488	106.7	1 570	547.0	34.8	127.5	8.11	808.7	51.5
	385	353	91.7	255	62.8	24.6	15.7	6.16	78.5	30.7
	209	211	101.0	142	47.6	33.5	8.1	5.69	55.7	39.2
	341	343	100.6	228	55.2	24.2	13.4	5.88	68.6	30.0
	114	141	123.7	79.8	42.6	53.3	5.4	6.74	48.0	60.1
	189	185	97.9	123	24.1	19.5	5.7	4.60	29.8	24.2
	139	161	115.8	90.0	19.6	21.8	5.0	5.57	24.6	27.3
	151	136	90.0	99.7	13.4	13.4	5.3	5.31	18.7	18.7
	377	369	97.9	253	81.6	32.2	11.1	4.37	92.7	36.6
tre	425	590	138.8	300	213.7	71.2	57.8	19.25	271.5	90.5

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shington D.C., 1971, Table 2 and this source, Table 33, (8) 50 + 51, (10) same as (7) and this source, Table 34, (11) 52 + 53,
54 + 55, (15) is (11) + (13).

Table 25. Regional ranking of enrolment ratios, 1970

	Percentage urban of total primary establishments		Percentage economically active of total population		Percentage pre-school enrolment		Percentage primary enrolment		Percentage secondary general enrolment		Percentage secondary technical enrolment		Percentage total secondary enrolment	
	Region	%	Region	%	Region	%	Region	%	Region	%	Region	%	Region	%
Total Peru		39.4		31.4		17.5		106.7		34.8		8.11		51.5
Rank order lowest 1st	7	20.7	6	25.2	7	8.4	7	90.0	7	13.4	8	4.37	7	18.7
2nd	3	27.6	1	28.0	1	10.3	1	91.7	5	19.5	5	4.60	5	24.2
3rd	5	30.2	8	28.6	5	13.6	5	97.9	6	21.8	7	5.31	6	27.3
4th	8	32.0	2	30.5	3	14.9	8	97.9	3	24.2	6	5.57	3	30.0
5th	1	33.7	3	30.7	8	16.0	3	100.6	1	24.6	2	5.69	1	30.7
6th	6	38.2	5	33.4 (Peru)	2	18.7 (Peru)	2	101.0	8	32.2	3	5.88	8	36.6
7th	2	40.2 (Peru)	7	34.2	6	23.7	6	115.8 (Peru)	2	33.5	1	6.16	2	39.2
8th	4	54.9	9	35.6	4	26.9	4	123.7	4	53.3 (Peru)	4	6.74	4	60.1 (Peru)
highest 9th	9	91.7	4	37.1	9	27.2	9	138.8	9	71.2	9	19.25 (Peru)	9	90.5

Source: Data from Table 24.

egional ranking of enrolment ratios, 1970

	Percentage urban of total primary establishments		Percentage economically active of total population		Percentage pre-school enrolment		Percentage primary enrolment		Percentage secondary general enrolment		Percentage secondary technical enrolment		Percentage total secondary enrolment	
	Region	%	Region	%	Region	%	Region	%	Region	%	Region	%	Region	%
ru		39.4		31.4		17.5		106.7		34.8		8.11		51.5
west 1st	7	20.7	6	25.2	7	8.4	7	90.0	7	13.4	8	4.37	7	18.7
2nd	3	27.6	1	28.0	1	10.3	1	91.7	5	19.5	5	4.60	5	24.2
3rd	5	30.2	8	28.6	5	13.6	5	97.9	6	21.8	7	5.31	6	27.3
4th	8	32.0	2	30.5	3	14.9	8	97.9	3	24.2	6	5.57	3	30.0
5th	1	33.7	3	30.7	8	16.0	3	100.6	1	24.6	2	5.69	1	30.7
6th	6	38.2	5	33.4 (Peru)	2	18.7 (Peru)	2	101.0	8	32.2	3	5.88	8	36.6
7th	2	40.2 (Peru)	7	34.2	6	25.7	6	115.8 (Peru)	2	33.5	1	6.16	2	39.2
8th	4	54.9	9	35.6	4	26.9	4	123.7	4	53.3 (Peru)	4	6.74	4	60.1 (Peru)
hest 9th	9	91.7	4	37.1	9	27.2	9	138.8	9	71.2	9	19.25 (Peru)	9	90.5

from Table 24.

national average puts the urban proportion of primary schools at about 40 per cent, the proportions range from about 20 per cent in the south-easternmost region, to about 28-30 per cent in regions V and III in the southern and central sierra to 32-33 per cent in the northern coastal regions (I and VIII), to 38 per cent in the oriente (which may partially reflect less total penetration of schooling rather than more 'urban' character of the region), to 40-55 per cent in the southern coastal regions, to almost 92 per cent in Lima. We can also get an index of the character of these educational regions by observing in Map 1 the areas which have been designated recently as 'zones of relatively less development' for purposes of awarding extra post pay to attract teachers.[1] The zones have been designated on a five-point scale which gives bonus pay which is greater the more remote the area. It is interesting that all areas except Lima metropolitan will rate at least some treatment as less developed, but with the amount increasing in the high sierra and eastern areas and the lowest on the northern coast and near Lima or Arequipa. This also gives some general picture of the degree of urban and remote character of the country superimposed on the map of educational regions.

We have grouped the country into four areas to test the extent to which geography may play an important general effect on planning data. As shown in Table 26, if we consider a grouping of regions, roughly a third of the population are in Regions VII, III and V, whose proportion of designated 'rural' primary schools is the highest. Roughly another third are in Regions I and VIII occupying an intermediate position, and the last third of the population are in Regions II, IV and VI, and Lima, having the highest proportion of designated urban schools. Since Lima is considerably different from Regions II, IV and VI, we consider it separately as a fourth category. Such a four-way breakdown enables us to grasp the extent to which a regional difference exists and also provides some planning parameters that may be useful in considering the effects of the final regional penetration of rural schooling as is contemplated in the educational goals of the seventies.

The enrolment ratios by this grouping of regions show the same progression as already discussed, the least urban having the lowest rates. Note especially the regional sensitivity of pre-school enrolment rates and secondary rates, particularly secondary technical. Lima has secondary general enrolment rates which are twice as high as the nearest group of regions and three and one-half times as high as for the least urban group. There is a marked gap between Lima and all of the rest of the country on the enrolment rates for secondary technical education. This fact of limited spread of technical education will become important when we contemplate the goals of the extension of vocational and technical education within the ordinary schooling programme on a country-wide scale.

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[1] Peru, Resolución Suprema No. 0028-73-PM/ONAP, Dictan normas de aplicación de factores de evaluación para remuneración al cargo, Lima, 16 February 1973.

Table 26. Features of schooling by regional grouping, 1970

	Apparent Enrolment ratios					Population per school			Pupil-teacher ratios			School size-pupils per school		
Regional groups	% of population	Pre-school	Primary	Secondary general	Secondary technical	Primary	Secondary general	Secondary technical	Primary	Secondary general	Secondary technical	Primary	Secondary general	Secondary technical
VII+III+V	29.8	12.3	96.0	19.1	5.3	614	17 050	46 300	39.6	26.1	20.6	90	313	262
VIII+I	31.3	13.0	94.8	28.3	5.3	650	11 050	40 600	41.5	27.4	19.4	111	371	254
VI+II+IV	14.1	23.1	113.8	36.2	5.8	550	8 450	30 400	38.1	25.6	16.1	113	354	223
Lima	2[illegible].2	27.2	138.8	71.2	19.3	1 307	6 140	21 800	36.6	25.5	22.9	278	473	455
TOTAL Peru	100.0	17.5	106.7	34.8	8.1	678	9 360	32 800	38.9	25.0	20.1	124	376	308

Source: Grouping of data from Table 24, and Appendix II, Tables IX, X and XI.

atures of schooling by regional grouping, 1970

Apparent Enrolment ratios					Population per school			Pupil-teacher ratios			School size-pupils per school		
% of population	Pre-school	Primary	Secondary general	Secondary technical	Primary	Secondary general	Secondary technical	Primary	Secondary general	Secondary technical	Primary	Secondary general	Secondary technical
29.8	12.3	96.0	19.1	5.3	614	17 050	46 300	39.6	26.1	20.6	90	313	262
31.3	13.0	94.8	28.3	5.3	650	11 050	40 600	41.5	27.4	19.4	111	371	254
14.1	23.1	113.8	36.2	5.8	550	8 450	30 400	38.1	25.6	16.1	113	354	223
20.2	27.2	138.8	71.2	19.3	1 307	6 140	21 800	36.6	25.5	22.9	278	473	455
100.0	17.5	106.7	34.8	8.1	678	9 360	32 800	38.9	25.0	20.1	124	376	308

ing of data from Table 24, and Appendix I, Tables IX, X and XI.

We can also examine a related but somewhat different parameter measuring school penetration, population per school. It is also shown in Table 26. The trends are indeed similar to those recorded by enrolment ratios. They differ however by the impact of differing regional age-structure of the population and differing school size. Note that primary schools are fairly evenly distributed throughout the country per unit of population. The full regional picture is confirmed in Table XI of Appendix II. There is much greater variety in population per secondary general school establishing ranging from one school per 6,000 to one school per 17,000, and in secondary technical schools the range is similarly high.

We can also use this grouping of regions to see if there are strongly revealed differences in regional school size (pupils per school) or in pupil/teacher ratios. Considering the detailed data of Tables IX and X in Appendix II, and the regional grouping of Table 26, there is no clear trend which would seem to be identified with the rural-urban character of these regional groupings. School size is clearly higher in Lima than in all the other regions (and regional groupings). But among the non-Lima regions there is some trend at the primary level for school size to be lower in the most rural regions. At the secondary level this is not clearly the case. Secondary general schools and secondary technical schools seem to show no clear trend with respect to average size. Among the eight regions, secondary general schools ranged from 297 pupils per school in Region VI to 392 in Region VIII, and secondary technical schools ranged from 218 pupils per school in Regions II and VI to 284 in Region V. The tendency in secondary technical schools was, if anything, the reverse of that for primary schools - the more rural the region, the larger the average size. Bearing in mind the lesser penetration of such schools it may simply have been the case that those that were in place were in more centralized locations and operating on a fuller scale.

Pupil/teacher ratios show considerable variation by region, but the variation does not seem systematically related to the degree of urban-rural breakdown, nor for that matter does Lima seem conspicuously different from the rest of the country. Among all regions Lima never showed the highest nor the lowest pupil/teacher ratio for any level of education. The greatest differences are, of course, between the levels themselves, almost 40 (pupils per teacher) at the primary level, 25 at the secondary level, and about 20 in secondary technical schooling.

The general picture which has been shown is one of considerable regional difference in the degree of penetration of schooling relative to population, particularly at the secondary level, and especially for technical secondary education. Where penetration has been greatest, namely at the primary level, there is also the greatest difference in average regional school size, but no clear tendency shows in pupil/teacher ratios. These are probably determined more by professional and employment standards than by size and location of the school.

Where penetration is less, particularly at the secondary technical level, there is no systematic size trend, except that schools are much larger in Lima.[1]

B. THE SCHOOLING LEVELS IN MORE DETAIL

The previous section of this chapter has portrayed the most important general indicators of trends in the Peruvian educational system in the sixties. For the purposes of the especially interested reader, and to build a base for analyzing possible future educational costs in a later chapter, we turn in this section to a more detailed analysis of each level of the educational system. We look at enrolments and enrolment rates, expenditures, salary and other unit costs, and how these have behaved during a period of rapid change. Some of the lessons drawn from this more detailed look suggest hypotheses for examining future trends of educational costs and requirements. This section also provides a somewhat fuller description of the educational system in effect until the new reform.

(i) First-level education

First-level schooling represents a great variety of types and qualities ranging across the immense geographical and cultural differences that exist in a good-sized country such as Peru. Pre-schooling for children largely from four to six years of age was begun 40 years ago in Lima and has remained more prevalent in the urban areas, and available often only for children getting the best of general educational offerings. But in recent years, with the growing awareness of the importance of formal or informal schooling experience in the 'pre-school' years for best shaping attitudes and abilities conducive to later learning, wider availability of pre-school education is being urged. During the past decade, the the first so-called 'transition' year of regular schooling has had as its objective the preparing of young pupils or adults for the schooling process. Including an introduction to basic reading, writing and arithmetic skills, it also introduces the students to the peculiar demands of formal school life. In early schooling, considerable emphasis has been placed on examination and certification for moving from one grade to the next.

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1. Anticipating our discussion in Chapter VI of projection variables, we suspect that average school size would have to fall in the more remote regions if secondary education were to greatly increase its penetration, let us say increasing the enrolment ratios for non-Lima populations enough to raise the national averages to the 1980 target of 45 per cent enrolment rates (see last column of Table 25 in comparison with Table 99 of Chapter VI. Secondary schools (or their replacement form under the reform) would have to operate under less favourable conditions of size and location than for those schools outside of Lima already in place.

This emphasis may have been a factor in the rates of drop-out and repetition which we have seen are high in this period. Straightening the pyramid of education may involve more successful adaptation of students to schooling with less repetition in the years ahead, and not simply the provision of more school space.[1]

Schools are classified as publicly supported (Fiscales) when they are supported by the budget of the Ministry of Education, the largest category; or Fiscalizadas when financed by agricultural or mining enterprises as required by law; or private (Privadas), run frequently but not always by the church. Since the private sector has always played an important role, its future participation is important to the total financing and provision of education. Most official projections seem to anticipate no significant change in the proportion of privately offered education, though the General Law reasserts the State's interest in maintaining qualitative controls over its practices and assuring against 'profit-making' activities.

We have already noted the substantial rise in enrolments resulting in apparent enrolment ratios over 100 per cent for first-level schooling. Table 27 shows the detail of these trends for all grade levels within first-level schooling and by category of school type. Reference is also made to Tables 28 and 29 for the proportional breakdowns. There the extent to which the higher grades have assumed greater importance is shown. It is interesting that relatively greater effort was devoted to higher grades in both the evening schools and the private schools. As Table 29 shows, the overall enrolment proportions of the private system had not changed over the decade, although the evening programmes had expanded relatively and their role in providing upper years of primary schooling had grown markedly. It is difficult to project these structural changes into the future. Clearly it was the evening programme which was relatively important in filling in the backlog of first-level schooling deficit, and this role will still need to be played in the seventies, but as the regular school programme converges on 100 per cent age-specific enrolment ratios, ratios that mark the goal of universal schooling, this role for evening schooling which grew so strongly during the sixties will attenuate. However, other functions such as continuing education may assert themselves in its place.

During the sixties the apparent schooling rates at first-level had risen from 83.5 per cent to 101.4 per cent. (See Table 7 above.) But apparent enrolment rates on a global basis can mask important deficits especially in relation to a goal of universal schooling of the age cohort group. As Table 30[2] shows, there is still a considerable spread of enrolments outside of the official ages of first-level schooling,

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1. The pyramid metaphor refers to the diminishing enrolments at higher levels.
2. Table 30 is also portrayed in Chart 3 above, page 33.

Table 27. First-level (Primaria) enrolments ('000 persons)

Grade	1960 Total	1960 Public	1960 Private[1]	1960 Evening[2]	1965 Total	1965 Public	1965 Private[1]	1965 Evening[2]	1970 Total	1970 Public	1970 Private[1]	1970 Evening[2]	1972 Total	1972 Public	1972 Private[1]	1972 Evening[2]
1st[3]	462.6	404.5	58.1	10.8	613.4	541.0	72.4	18.5	659.0	576.5	82.5	22.0	-	-	-	-
2nd	283.8	241.1	42.7	9.1	392.8	335.9	56.9	17.2	464.5	398.3	66.2	20.8	-	-	-	-
3rd	216.5	183.3	33.2	7.6	291.2	246.5	44.7	15.9	371.3	314.3	57.0	19.9	-	-	-	-
4th	170.0	143.7	26.3	7.4	251.9	213.4	38.5	15.7	336.2	284.2	52.0	22.3	-	-	-	-
5th	128.4	108.4	20.0	7.0	199.5	169.0	30.5	15.7	279.6	236.2	43.4	24.1	-	-	-	-
6th	96.9	80.5	16.4	5.3	151.8	126.9	24.9	12.8	230.5	192.1	38.4	22.6	-	-	-	-
7th	-	-	-	3.1	-	-	-	8.2	-	-	-	15.6	-	-	-	-
TOTAL	1358.1	1161.6	196.5	50.3	1900.6	1632.7	267.9	104.0	2341.1	2001.6	339.5	147.3	2469.0	2113.2	355.8	155.7

1. Private is defined as 'total' minus 'oficial'; all are day programmes only.

2. Total public and private, it includes 'iniciación' programmes, in addition enrolments in 'alfabetización' were 1960, 51.2 ; 1965, 101.8 ; 1970, 75.0 ; 1971, 91.5 ; 1972, 134.9.

3. 1st grade refers to earlier grade 'transición'.

Source: Peru, Ministerio de Educación, Oficina sectoral de planificación, El financiamiento de los gastos de educación en el Perú, 1960-72, Lima, 1973, for IIEP/Unesco, Table II.1.

st-level (Primaria) enrolments ('000 persons)

1960				1965				1970				1972			
Total	Public	Pri-vate[1]	Eve-ning[2]	Total	Public	Pri-vate[1]	Eve-ning[2]	Total	Public	Pri-vate[1]	Eve-ning[2]	Total	Public	Pri-vate[1]	Eve-ning[2]
462.6	404.5	58.1	10.8	613.4	541.0	72.4	18.5	659.0	576.5	82.5	22.0	-	-	-	-
283.8	241.1	42.7	9.1	392.8	335.9	56.9	17.2	464.5	398.3	66.2	20.8	-	-	-	-
216.5	183.3	33.2	7.6	291.2	246.5	44.7	15.9	371.3	314.3	57.0	19.9	-	-	-	-
170.0	143.7	26.3	7.4	251.9	213.4	38.5	15.7	336.2	284.2	52.0	22.3	-	-	-	-
128.4	108.4	20.0	7.0	199.5	169.0	30.5	15.7	279.6	236.2	43.4	24.1	-	-	-	-
96.9	80.5	16.4	5.3	151.8	126.9	24.9	12.8	230.5	192.1	38.4	22.6	-	-	-	-
-	-	-	3.1	-	-	-	8.2	-	-	-	15.6	-	-	-	-
1358.1	1161.6	196.5	50.3	1900.6	1632.7	267.9	104.0	2341.1	2001.6	339.5	147.3	2469.0	2113.2	355.8	155.7

defined as 'total' minus 'oficial'; all are day programmes only.

ic and private, it includes 'iniciación' programmes, in addition enrolments in 'alfabetización' were 1960, 51,2 ; 1965, 101.8 ; ; 1971, 91.5 ; 1972. 134.9.

refers to earlier grade 'transición'.

, Ministerio de Educación, Oficina sectoral de planificación, El financiamiento de los gastos de educación en el Perú, 1960-72, , 1973, for IIEP/Unesco, Table II. 1.

Table 28. Trends in grade structure of first-level school enrolment percentages in selected grades (percentages)

Grade	1960				1970			
	Total	Public	Private	Evening[1]	Total	Public	Private	Evening[1]
1st[2]	34.1	34.8	29.5	22.9	28.1	28.8	24.3	16.7
4th	12.5	12.4	13.4	15.6	14.4	14.2	15.3	16.9
6th	7.1	6.9	8.3	11.2	9.8	9.6	11.3	17.1
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

1. Evening percentage calculations based on grades 1 (iniciación only) to 6 only, public and private combined.
2. Referred to as "transición' in earlier periods.

Source: Computed from data of Table 27.

Table 29. Trends in enrolment by type of school for selected grades (percentages)

Grade	1960				1970			
	Total	Public	Private	Evening[1]	Total	Public	Private	Evening[1]
1st[2]	100.0	87.4	12.6	2.3	100.0	87.5	12.5	3.3
4th	100.0	84.5	15.4	4.3	100.0	84.5	15.4	6.6
6th	100.0	83.1	16.9	5.5	100.0	83.3	16.7	9.8
TOTAL	100.0	85.5	14.5	3.7	100.0	85.5	14.5	6.3

1. Evening percentage calculations based on grades 1 (iniciación only) to 6 only, public and private combined.
2. Referred to as 'transición' in earlier periods.

Source: Computed from data of Table 27.

rends in grade structure of first-level school enrolment percentages in selected grades (percentages)

	1960				1970			
	Total	Public	Private	Evening[1]	Total	Public	Private	Evening[1]
	34.1	34.8	29.5	22.9	28.1	28.8	24.3	16.7
	12.5	12.4	13.4	15.6	14.4	14.2	15.3	16.9
	7.1	6.9	8.3	11.2	9.8	9.6	11.3	17.1
	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

percentage calculations based on grades 1 (iniciación only) to 6 only, public and private combined.
to as "transición' in earlier periods.

nputed from data of Table 27.

rends in enrolment by type of school for selected grades (percentages)

	1960				1970			
	Total	Public	Private	Evening[1]	Total	Public	Private	Evening[1]
	100.0	87.4	12.6	2.3	100.0	87.5	12.5	3.3
	100.0	84.5	15.4	4.3	100.0	84.5	15.4	6.6
	100.0	83.1	16.9	5.5	100.0	83.3	16.7	9.8
	100.0	85.5	14.5	3.7	100.0	85.5	14.5	6.3

ercentage calculations based on grades 1 (iniciación only) to 6 only, public and private combined.
to as 'transición' in earlier periods.

puted from data of Table 27.

Table 30. Rates of first-level enrolment, 1970[1]

Age		Age population ('000)		Enrolled age population ('000)		Age specific enrolment rates (%)	
3		453.3		3.0		.7	
4		442.0		23.0		5.2	
5		425.3		44.9		10.6	
6		411.2		220.9		53.7	
7	official	400.9		288.9		72.1	
8	schooling	391.8	2 309.6	302.2	1 684.1	77.1	729.1
9	ages	383.1		301.8		78.8	
10		360.1		304.0		84.4	
11		362.5		266.3		73.5	
12		351.1		243.1		69.2	
13		334.6		184.2		55.1	
14		318.2		146.2		45.9	
15		302.7		98.7		32.6	
16		288.9		63.7		22.0	
17		276.8		40.3		14.6	
18		266.7		27.5		10.3	
19		258.3		17.3		6.7	
20		251.2		12.3		5.0	
21		244.4		7.9		3.2	
22		236.9		6.0		2.5	
23		227.9		4.6		2.0	
24		218.1		4.0		1.8	
25 - 29		965.3		19.4		2.0	
TOTAL		8 171.3		2 630.2		32.2	

[1] This table differs from Table 9 above in that it shows enrolment of an age group in primary level schooling only, regardless of which primary grade.

Source: Peru, Ministerio de Educación, Oficina sectoral de planificación, El financiamento de los gastos de educación en el Peru, 1960-1972, Lima, 1973, for IIEP/Unesco.

ates of first-level enrolment, 1970[1]

	Age population ('000)		Enrolled age population ('000)		Age specific enrolment rates (%)	
	453.3		3.0		.7	
	442.0		23.0		5.2	
	425.3		44.9		10.6	
	411.2)	2 309.6	220.9)	1 684.1	53.7)	729.1
icial	400.9)		288.9)		72.1)	
hooling	391.8)		302.2)		77.1)	
s	383.1)		301.8)		78.8)	
	360.1)		304.0)		84.4)	
	362.5)		266.3)		73.5)	
	351.1		243.1		69.2	
	334.6		184.2		55.1	
	318.2		146.2		45.9	
	302.7		98.7		32.6	
	288.9		63.7		22.0	
	276.8		40.3		14.6	
	266.7		27.5		10.3	
	258.3		17.3		6.7	
	251.2		12.3		5.0	
	244.4		7.9		3.2	
	236.9		6.0		2.5	
	227.9		4.6		2.0	
	218.1		4.0		1.8	
	965.3		19.4		2.0	
	8 171.3		2 630.2		32.2	

differs from Table 9 above in that it shows enrolment of an age group in *primary level* schooling only, of which primary grade.

, Ministerio de Educación, Oficina sectoral de planificación, *El financiamento de los gastos de educación Peru, 1960-1972*, Lima, 1973, for IIEP/Unesco.

even though 73 per cent of the official age-group is being schooled. These data, which are available from a comprehensive school survey of 1970, show where unmet schooling needs exist. Perhaps the one-quarter still not being reached by the substantially expanded present school system will require different schooling, qualitatively differentiated and more difficult to establish. We have in mind the remaining problems successful regional penetration in remote areas and sub-cultural group penetration. One might in fact wonder whether the present first-level schooling may represent some over-capacity in the years ahead if locational factors are put into the analysis. In any case, it seems important to note the extent to which regional factors and locational ones will bear on the efficient provision of schooling to the group presently not being covered, and it is in this area that aggregative projection on basis of past trends is inadequate.

Turning to cost factors, Table 31 and 32 show the details of the recurrent expenditures on first-level education in the public and private sectors respectively. In the public sector the table shows the relatively small recorded expenditures for maintenance and materials. These are virtually unrecorded until 1967, a year in which they reach 1.4 per cent of total expenditures, slipping back to 0.7 per cent of total recurrent expenditures in 1970.[1] Other expenditures reflecting family assistance grants become as much as 2.3 per cent by 1970. Although material costs may not be completely accounted for by these data, the proportions, as we have noted above, are small. They reflect needs for better provision of school materials, which are known to be inadequate in many of the schools. Material costs can be expected to rise considerably as relatively higher grades and more middle-level education appear in the total educational structure, but more and better teaching materials may be needed in lower grades as well.

Another factor of qualitative and cost implication for education is the trend of teacher qualification. Table 33 shows the trends in the past decade of first-level education. The number of teachers with teaching degrees has risen from over one-third to over one-half. This increase may demonstrate qualitative improvement during the past ten years, and since overall salary scales are at least partially determined by the categories shown, it is also a factor in the rise of total recurrent expenditures.

Teacher salaries have played a crucial part in the trends of recurrent expenditures during the past decade, as Table 34 shows, and as we discuss in a section of Chapter VI below. Because of the substantial shift in the general price level it is necessary to remove the effects of inflation to see just how the shift of teacher salaries has affected real education costs. The average salary, which here is defined as the total wage bill divided by the number of teachers, rose steadily by 60 per

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[1] 'Maintenance and materials' apparently includes allowance for rental of buildings. Since this practice is more common among private schools, it accounts for some of the discrepancy compared to the public sector.

Table 31. Trend of recurrent public primary education expenditure by type[1] (current S/.'000,000)

	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972
Administration[2]	23.9	29.4	42.2	110.2	146.1	285.1	299.8	177.5	213.6	183.6	278.8	255.2	350.0
Salaries	847.1	1 019.4	1 207.7	1 370.2	1 597.1	2 590.0	3 221.6	3 225.6	3 407.2	3 743.0	3 597.0	3 615.1	4 872.4
Maintenance and materials	0.2	-	-	3.6	8.3	6.5	8.0	48.2	40.0	34.7	30.8	39.1	86.6
School canteens	-	-	-	-	-	-	-	-	-	2.3	2.2	3.0	3.5
Other expentures	-	-	-	26.5	37.8	53.2	41.2	37.2	34.4	35.3	93.2	74.0	92.3
TOTAL	871.2	1 048.8	1 249.9	1 510.5	1 789.3	2 934.8	3 570.6	3 488.5	3 695.2	3 998.9	4 002.0	3 986.4	5 404.8

1. Years 1963, 1964, 1967, 1968 and 1969 are for 12 months.
2. Estimated.

Source: Contraloría general de la república, Contaduria general - Ministerio de Educación; Oficina de estudios económicos y financieros - Oficina de presupuesto - Ministerio de Educación.

Table 32. Trend of recurrent private primary education expenditure by type (current S/.'000,000)

	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972
Administration	25.0	28.0	30.7	31.2	37.8	24.4	56.6	60.1	78.5	115.7	134.4	132.9	143.9
Salaries	98.9	110.4	121.0	152.4	123.5	314.7	291.3	421.4	546.0	543.5	530.7	684.1	811.3
Maintenance and materials	61.1	68.2	74.8	76.1	92.4	59.5	138.0	146.7	191.6	282.4	328.0	324.4	351.2
TOTAL	185.0	206.6	226.5	259.7	253.7	398.6	485.9	628.2	816.1	941.6	993.1	1 141.4	1 306.4

Source: Ministerio de Educación, Oficina Sectoral de Planificación, El Financiamento de los Gastos de Educación en el Perú, 1960-72, Table III.1, Lima, 1973, for IIEP/Unesco.

rend of recurrent public primary education expenditure by type[1] (current S/.'000,000)

	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972
on[2]	23.9	29.4	42.2	110.2	146.1	285.1	299.8	177.5	213.6	183.6	278.8	255.2	350.0
	847.1	1 019.4	1 207.7	1 370.2	1 597.1	2 590.0	3 221.6	3 225.6	3 407.2	3 743.0	3 597.0	3 615.1	4 872.4
and	0.2	-	-	3.6	8.3	6.5	8.0	48.2	40.0	34.7	30.8	39.1	86.6
ns	-	-	-	-	-	-	-	-	-	2.3	2.2	3.0	3.5
	-	-	-	26.5	37.8	53.2	41.2	37.2	34.4	35.3	93.2	74.0	92.3
	871.2	1 048.8	1 249.9	1 510.5	1 789.3	2 934.8	3 570.6	3 488.5	3 695.2	3 998.9	4 002.0	3 986.4	5 404.8

3, 1964, 1967, 1968 and 1969 are for 12 months.
d.

traloría general de la república, Contaduria general - Ministerio de Educación; Oficina de estudios económicos y financieros - ina de presupuesto - Ministerio de Educación.

rend of recurrent private primary education expenditure by type (current S/.'000,000)

	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972
on	25.0	28.0	30.7	31.2	37.8	24.4	56.6	60.1	78.5	115.7	134.4	132.9	143.9
	98.9	110.4	121.0	152.4	123.5	314.7	291.3	421.4	546.0	543.5	530.7	684.1	811.3
and	61.1	68.2	74.8	76.1	92.4	59.5	138.0	146.7	191.6	282.4	328.0	324.4	351.2
	185.0	206.6	226.5	259.7	253.7	398.6	485.9	628.2	816.1	941.6	993.1	1 141.4	1 306.4

isterio de Educación, Oficina Sectoral de Planificación, El Financiamento de los Gastos de Educación en el Perú, 1960-72, e III.1, Lima, 1973, for IIEP/Unesco.

Table 33. Qualification structure of primary school teachers (number of teachers, percentages)

Qualification level	1960	%	1965	%	1970	%
1st category[1]	14 607	37.9	23 155	45.3	36 679	55.2
2nd category[2]	5 704	14.8	4 549	8.9	3 920	5.9
3rd category[3]	18 229	47.3	23 412	45.8	25 849	38.9
TOTAL	38 540	100.0	51 116	100.0	66 448	100.0

1. 1st category: generally those with Pedagógico degree.
2. 2nd category: generally those without Pedagógico degree.
3. 3rd category: generally those without Pedagógico degree and without having completed pedagogical studies.

Total teachers for 1972 is reported at 67 092 without breakdown by category.

Source: Peru, Ministerio de Educacion, Oficina sectoral de planificacion, El financiamento de los gastos de educación en el Perú, 1960-72, Lima, 1973 for IIEP/Unesco, Table II.2.

cent for first-level teachers from 1960 to a peak in 1966 in constant 1970 soles terms. Thereafter though the soles value remained about constant on average, the value in real terms dropped about 35 per cent. These same trends can be seen without resort to a given and necessarily somewhat arbitrary deflation factor by quoting teachers' salaries as a multiple of per capita G.D.P. That ratio went from 3.87 in 1960 to a peak of 5.13 in 1965, receding to 3.12 in 1970, the lowest in the decade.

We have already discussed above the implications of rapid, and perhaps inadequately controlled, shifts in salary policy. We must bear in mind that the average age and years of experience level of the teaching force was most likely dropping during the decade. We have also seen that the average qualification level was rising so it does not follow that the individual teacher's personal fortunes were fluctuating quite as much as the averages.[1] But when we include the effects (see last line of Table 34) of shifts of pupil/teacher ratios (which tended perhaps fortuitously to offset some of the cost effects of trends of salaries, i.e. higher student ratios during periods of higher real average salaries), the net result is a substantial shift in real unit recurrent costs (costs per pupil) during the decade. For public schools these peaked at S/.2 765 (1970) per pupil in 1966 and had fallen to S/.1 809(1970) per

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[1] Chart 20 in Chapter VI, shows that the salary scale was also fluctuating in real (deflated) terms during the sixties.

Table 34. Trend of unit recurrent costs of primary education (current soles + 1970 soles)[1]

	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972
Public instruction													
Total recurrent unit costs	694	784	899	848	996	1 602	1 896	1 784	1 810	1 905	1 809	1 817	2 393
- ditto - 1970 soles	1 581	1 702	1 893	1 721	1 841	2 543	2 765	2 370	2 019	2 001	1 809	1 703	2 089
Salary unit costs	674	766	869	769	889	1 414	1 711	1 649	1 669	1 783	1 626	1 760	2 305
- ditto - 1970 soles	1 537	1 663	1 830	1 561	1 643	2 244	2 495	2 191	1 861	1 873	1 626	1 649	2 013
Private instruction													
Total recurrent unit costs	1 000	942	1 006	1 079	983	1 452	1 629	2 045	2 560	2 765	3 095	3 277	3 671
- ditto - 1970 soles	2 075	2 045	2 118	2 190	1 817	2 305	2 375	2 718	2 856	2 904	3 095	3 071	3 205
Salary unit costs	486	503	538	633	478	1 147	977	1 372	1 713	1 596	1 654	1 964	2 280
- ditto - 1970 soles	1 109	1 092	1 131	1 285	884	1 821	1 425	1 823	1 911	1 676	1 654	1 841	1 990
Public instruction													
Average teacher salary	21 980	24 726	27 852	29 977	32 618	50 669	56 333	52 685	54 578	58 911	54 133	54 187	72 623
- ditto - 1970 soles	50 137	53 682	58 648	60 855	60 303	80 427	82 154	69 995	60 872	61 868	54 133	50 784	63 410
As a multiple of per capita GDP	3.87	4.00	4.04	4.08	3.81	5.13	4.95	4.16	3.76	3.78	3.12	2.73	3.38
Pupil-teacher ratio	35.2	34.1	33.6	34.5	36.6	37.2	35.4	34.5	35.2	35.7	35.2	36.0	36.8

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1. Deflated by IIEP using cost of living index of personal consumption expenditure; see Appendix I, Table VII.

Source: Ministerio de Educación, Oficina Sectoral de Planificación, El Financiamento de los Gastos de Educación en el Peru, 1960-72, Table IV-3, Lima, 1973, for IIEP/Unesco.

end of unit recurrent costs of primary education (current soles + 1970 soles)[1]

	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972
ction													
ent unit costs	694	784	899	848	996	1 602	1 896	1 784	1 810	1 905	1 809	1 817	2 393
soles	1 581	1 702	1 893	1 721	1 841	2 543	2 765	2 370	2 019	2 001	1 809	1 703	2 089
osts	674	766	869	769	889	1 414	1 711	1 649	1 669	1 783	1 626	1 760	2 305
soles	1 537	1 663	1 830	1 561	1 643	2 244	2 495	2 191	1 861	1 873	1 626	1 649	2 013
uction													
nt unit costs	1 000	942	1 006	1 079	983	1 452	1 629	2 045	2 560	2 765	3 095	3 277	3 671
soles	2 075	2 045	2 118	2 190	1 817	2 305	2 375	2 718	2 856	2 904	3 095	3 071	3 205
osts	486	503	538	633	478	1 147	977	1 372	1 713	1 596	1 654	1 964	2 280
soles	1 109	1 092	1 131	1 285	884	1 821	1 425	1 823	1 911	1 676	1 654	1 841	1 990
ction													
her salary	21 980	24 726	27 852	29 977	32 618	50 669	56 333	52 685	54 578	58 911	54 133	54 187	72 623
soles	50 137	53 682	58 648	60 855	60 303	80 427	82 154	69 995	60 872	61 868	54 133	50 784	63 410
of per													
	3.87	4.00	4.04	4.08	3.81	5.13	4.95	4.16	3.76	3.78	3.12	2.73	3.38
ratio	35.2	34.1	33.6	34.5	36.6	37.2	35.4	34.5	35.2	35.7	35.2	36.0	36.8

y IIEP using cost of living index of personal consumption expenditure; see Appendix I, Table VII.

sterio de Educación, Oficina Sectoral de Planificación, El Financiamento de los Gastos de Educación en el Peru, 1960-72,
e IV-3, Lima, 1973, for IIEP/Unesco.

pupil by 1970. Given the economic crisis of 1967, no other path was available but to cut real educational costs, and it is likely that the total growth handled in the decade as a whole could not have been accomplished had unit costs not come down. The unit cost trends are similar in private education, particularly the salary costs. But it is interesting that private education, perhaps because it includes within its sector some of the best equipped schooling, has substantially heavier non-salary costs, and the trends in these costs have not reversed. The net result is that total unit costs have not come down, to match the salary trends.

Obviously any attempts at projection of future costs of education will depend crucially on what can be done to restrain teacher salary costs. After recent expansion of teacher education and the expanded supply of trainees, labour market forces alone would not seem to call for substantial cost or salary increases, and would tend to support the recent policy of restraint. Much of the emphasis with reform will be on qualitative changes in educational methods and will involve a restatement of methods of performance within the teaching profession. Ideally, salary policy should be used to encourage these ends, to recognize merit and to promote performance within the aims of reform, and it is obvious from their very size and across-the-board nature that salary increases in the last decade cannot have fully served these objectives.

Looking for a moment at the situation in the years 1971 and 1972, early statistical returns indicate that enrolments at the primary level have risen in the last two years at only 2.7 per cent per annum overall, down considerably from the average of 1960-70, 5.8 per cent, or even the last half of the decade, 4.0 per cent. These trends appear to be the same for public and private enrolments.

In 1971, current soles expenditures levelled off completely in the public sector, and per pupil unit costs, deflated, reached their recent lowest point, a level as low as the early sixties. Average teacher salaries, constant for almost four years in current terms, had fallen on a deflated basis by 1971 to the lowest level in 10 years. This was confirmed by the lowest ratio of average salary to G.D.P. per capita in more than 10 years also.

But 1972 brought the beginning of a swift reversal of these trends. In that year average salary jumped from S/. 54 187 to S/. 72 623, an increase in real terms calculated at almost 25 per cent in a single year. Since the pupil/teacher ratio had not changed very much (up 4.5 per cent in two years) the effects of salary increases were felt in similar increases in unit costs. From 1971 to 1972 these rose to 32 per cent (23 per cent in real terms) in the public sector, and somewhat more modestly, 12 per cent (4 per cent in real terms), from a less depressed position in the private sector (see Table 34).

The data, especially price-deflated data, show clearly that the educational system is still fully subject to the stop-go salary policy that has characterized much of the last ten years.

We can proceed to look at some of these same trends with respect to the other levels of education.

(ii) Second-level education

We have already noted the substantial expansion of second-level education in the past decade. This is shown in further detail in Table 35. In the regular day-time programme, enrolments more than tripled up to 1970, and in the evening courses they increased by more than five times. Table 36 shows the grade structure trends. There has been relatively little shift in structure overall - some modest increase in the proportions enrolled in the higher grades, with a more marked shift in this respect in both private and evening branches. Following the same patterns noted in first-level education, private education has a significantly larger proportion of its enrolments in the upper classes.

From Table 37 it may be seen that as the public sector grew more rapidly, private education diminished its proportionate role from 32.9 to 13.4 per cent of day enrolments. The evening programme grew relatively fast from 11.8 to 19 per cent of all enrolments. But the total growth that did take place in the private sector (and its numbers nearly doubled during the decade, see Table 35) was centered even more in the upper class years of the programme, leaving its proportions of effort at the different grade levels much more evenly distributed than the other school types.

Second-level education was organised into two main branches, general (común) and technical (técnica). General work, which is offered both in regular day-time (diurna) and evening (verspertina y nocturna) versions, is organized around subject courses, each of which is taught by a specialized teacher. An approved and largely common curriculum is offered until the third grade, (often until the fourth grade for night students); thereafter, they may specialize in either the sciences or the humanities. Work is formally passed each year by a set of examinations offered in both public and private schools. The latter are required to follow the Ministry-approved curriculum, and official examiners (Jurados) are appointed to give the final examinations for each grade. Technical secondary education, besides the common and more general beginning curriculum, offers specialization in commercial, agricultural (agropecuaria including thus livestock) or industrial studies, with separate subjects provided in the latter for women. Certificates of technical qualification also require a year's supervised practical work for the branches in agriculture or industry and a large proportion of graduates from these programmes are referred onward to the Higher Institutes of Agriculture, Commerce and Industry.

The entire picture of second-level specialization is shown in Table 38 with the following notable trends. Total day enrolments rose 314 per cent in the decade; the evening programmes rose even faster, 548 per cent. In the last two years, 1971-72, the growth of day programmes was faster, 40 per cent, compared to 32 per cent for evening ones. This immense rate of total growth of secondary education produced some interesting shifts of relative importance by category not all of which appear to be in line with national needs or newly redefined national priorities.

Table 35. Second-level (Secondaria) Enrolments ('000 persons)

Grade	1960				1965				1970				1972			
	Total[2]	Public[2]	Private[2]	Evening[1]	Total[2]	Public[2]	Private[2]	Evening[1]	Total[2]	Public[2]	Private[2]	Evening[1]	Total[2]	Public[2]	Private[2]	Evening[1]
1st	56.8	36.9	19.9	8.4	111.8	88.0	23.8	21.5	167.4	140.2	27.2	38.2	-	-	-	-
3rd	30.0	22.9	7.1	4.4	56.6	42.4	14.2	8.8	102.5	83.3	19.2	22.3	-	-	-	-
5th	17.6	11.6	6.0	2.0	33.8	24.2	9.6	4.7	67.9	52.4	15.5	13.2	-	-	-	-
Total[3]	174.8	117.3	57.5	23.4	324.5	247.7	76.8	58.0	546.0	445.7	100.3	128.3	770.2[4]	637.6[4]	135.6	170.0

1. Includes public + private.

2. Full- or day-time programme only.

3. All grades.

4. Estimated at IIEP.

Source: Ministerio de Educación, Peru, Oficina Sectoral de Planificación, El Financiamento de los Gastos de Educación en el Perú, 1960-72, Lima 1973, Table II 6/7.

d-level (Secondaria) Enrolments ('000 persons)

1960			1965				1970				1972			
Pu-blic[2]	Pri-vate[2]	Eve-ning[1]	To-tal[2]	Pu-blic[2]	Pri-vate[2]	Eve-ning[1]	To-tal[2]	Pu-blic[2]	Pri-vate[2]	Eve-ning[1]	To-tal[2]	Pu-blic[2]	Pri-vate[2]	Eve-ning[1]
36.9	19.9	8.4	111.8	88.0	23.8	21.5	167.4	140.2	27.2	38.2	-	-	-	-
22.9	7.1	4.4	56.6	42.4	14.2	8.8	102.5	83.3	19.2	22.3	-	-	-	-
11.6	6.0	2.0	33.8	24.2	9.6	4.7	67.9	52.4	15.5	13.2	-	-	-	-
17.3	57.5	23.4	324.5	247.7	76.8	58.0	546.0	445.7	100.3	128.3	770.2[4]	637.6[4]	135.6	170.0

lic + private.

-time programme only.

IIEP.

rio de Educación, Peru, Oficina Sectoral de Planificación, El Financiamento de los Gastos de Educación en el Perú,
2, Lima 1973, Table II 6/7.

Table 36. Trends of grade structure, second-level, enrolment percentages in selected grades (percentages)

Grades	1960				1970			
	Total[2]	Public[2]	Private[2]	Evening[1]	Total[2]	Public[2]	Private[2]	Evening[1]
1st	32.5	31.5	34.6	35.9	30.7	31.5	27.1	20.8
2nd	17.2	19.5	12.3	18.8	18.8	18.7	19.1	17.4
5th	10.1	9.9	10.4	8.5	12.4	11.8	15.5	10.3
TOTAL[3]	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

1. Includes public and private.
2. Full- or day- time programme only.
3. All grades.

Source: Data are from Table 35.

Table 37. Trends of enrolment by type of school for selected grades of second-level (percentages)

Grades	1960				1970			
	Total[2]	Public[2]	Private[2]	Evening[1]	Total[2]	Public[2]	Private[2]	Evening[1]
1st	100.0	65.0	35.0	12.9	100.0	83.8	16.2	18.6
2nd	100.0	76.3	23.7	12.8	100.0	81.3	18.7	17.9
3rd	100.0	65.9	34.1	10.2	100.0	77.2	22.8	16.3
TOTAL[3]	100.0	67.1	32.9	11.8	100.0	81.6	18.4	19.0

1. Includes public + private as a percentage of all enrolments.
2. Full-or day-time programme only.
3. All grades.

Source: Data are from Table 35.

Trends of grade structure, second-level, enrolment percentages in selected grades (percentages)

	1960				1970			
	Total[2]	Public[2]	Private[2]	Evening[1]	Total[2]	Public[2]	Private[2]	Evening[1]
	32.5	31.5	34.6	35.9	30.7	31.5	27.1	20.8
	17.2	19.5	12.3	18.8	18.8	18.7	19.1	17.4
	10.1	9.9	10.4	8.5	12.4	11.8	15.5	10.3
	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

public and private.
day- time programme only.
es.

ta are from Table 35.

Trends of enrolment by type of school for selected grades of second-level (percentages)

	1960				1970			
	Total[2]	Public[2]	Private[2]	Evening[1]	Total[2]	Public[2]	Private[2]	Evening[1]
	100.0	65.0	35.0	12.9	100.0	83.8	16.2	18.6
	100.0	76.3	23.7	12.8	100.0	81.3	18.7	17.9
	100.0	65.9	34.1	10.2	100.0	77.2	22.8	16.3
	100.0	67.1	32.9	11.8	100.0	81.6	18.4	19.0

public + private as a percentage of all enrolments.
day-time programme only.
es.

a are from Table 35.

Table 38. Trends of second-level enrolment by type of school programme ('000 persons)

School type	DAY						EVENING			
			TECHNICAL							
Year	Total Day (1) (1)=(2)+(3)	General (2)	Technical (3) (3)=(4)+(5)+(6)	Commercial (4)	Agro-fishing (5)	Industrial (6)	Total Evening (7) (7)=(8)+(9)	General (8)	Commercial (9)	Total Day + Evening (10) (10)=(1)+(7)
1960										
Total	174.8	144.1	30.7	10.5	3.3	17.6	23.4	14.8	8.6	198.2
Public	117.3	89.7	27.6	7.5	3.3	16.7	21.2	14.8	6.4	138.5
Private	57.5	54.4	3.1	3.0	-	0.9	2.2	-	2.2	59.7
1965										
Total	325.1	271.1	53.4	16.5	9.0	27.9	58.0	42.7	15.3	383.1
Public	247.7	197.9	49.8	13.4	9.0	24.1	52.3	39.2	13.1	300.0
Private	77.4	73.2	3.6	3.1	-	3.8	5.7	3.5	2.2	83.1
1970										
Total	546.0	453.0	93.0	31.3[1]	15.4	46.3[1]	128.3	94.3	34.0	674.3
Public	445.7	355.6	90.1	29.6	15.4	45.1	120.0	87.7	32.3	565.7
Private	100.3	97.4	2.9	1.7	-	1.2	8.3	6.6	1.7	108.6
1972										
Total	770.2[2]	638.6	131.6	57.0	18.6	56.0	170.0	119.1	50.9	940.2
Public	634.6[2]	508.6	126.0	55.5	18.6	51.9	154.0	109.6	44.4	788.6
Private	135.6[2]	130.0	5.6	1.5	-	4.1	16.0	9.5	6.5	151.6

1. Preliminary figures.

2. Estimated at IIEP.

Source: Ministerio de Educación, Peru, Oficina Sectoral de Planificación, El Financiamiento de los Gastos de Educación en el Perú, 1960-72, Table 6/7a-i, Lima, 1973, for IIEP/Unesco.

Note: Totals do not necessarily add due to rounding.

nds of second-level enrolment by type of school programme ('000 persons)

DAY						EVENING			
		TECHNICAL							
otal Day (1))=(2)+(3)	General (2)	Technical (3) (3)=(4)+(5)+(6)	Commercial (4)	Agro-fishing (5)	Industrial (6)	Total Evening (7) (7)=(8)+(9)	General (8)	Commercial (9)	Total Day + Evening (10) (10)=(1)+(7)
174.8	144.1	30.7	10.5	3.3	17.6	23.4	14.8	8.6	198.2
117.3	89.7	27.6	7.5	3.3	16.7	21.2	14.8	6.4	138.5
57.5	54.4	3.1	3.0	-	0.9	2.2	-	2.2	59.7
325.1	271.1	53.4	16.5	9.0	27.9	58.0	42.7	15.3	383.1
247.7	197.9	49.8	13.4	9.0	24.1	52.3	39.2	13.1	300.0
77.4	73.2	3.6	3.1	-	3.8	5.7	3.5	2.2	83.1
546.0	453.0	93.0	31.3[1]	15.4	46.3[1]	128.3	94.3	34.0	674.3
445.7	355.6	90.1	29.6	15.4	45.1	120.0	87.7	32.3	565.7
100.3	97.4	2.9	1.7	-	1.2	8.3	6.6	1.7	108.6
770.2[2]	638.6	131.6	57.0	18.6	56.0	170.0	119.1	50.9	940.2
634.6[2]	508.6	126.0	55.5	18.6	51.9	154.0	109.6	44.4	788.6
135.6[2]	130.0	5.6	1.5	-	4.1	16.0	9.5	6.5	151.6

figures.

IIEP.

rio de Educación, Peru, Oficina Sectoral de Planificación, El Financiamento de los Gastos de Educación en el Perú, 2, Table 6/7a-i, Lima,1973, for IIEP/Unesco.

not necessarily add due to rounding.

In the day programmes, the sixties saw a somewhat faster growth of general than technical enrolments, and within the latter, the industrial stream grew least of all (commercial studies being the greatest). In the evening programmes, general studies grew faster than commercial studies until 1970, a trend moderately reversed in the last two years. In terms of the priorities of the new educational reform (to be discussed below) and the needs of the economy for more technically trained manpower, it is clear that the rapid expansion of the last decade has not especially favoured these priority areas. For example, 12 per cent of secondary day enrolments in 1960 were in the industrial or agricultural stream, whereas after ten years in a system which had grown four and one-half times, this proportion had slipped to 9.8 per cent. The recent past, by yielding as much as anything to forces of social demand, has not of itself produced the priorities which were to be called for in the educational reforming of the early seventies.

Second-level enrolment figures for the decade to 1970 show apparent enrolment ratios which have more than doubled (see Table 39). The second-level schooling capacity was approaching one-third of the normal age population, up from a mere one-eighth ten years earlier. By 1972 it was estimated at almost 40 per cent. These figures include only the regular day programmes. Table 40, which includes night enrolments as well, shows that about three-quarters of those in the secondary schools were of the normal age population, the others stretching into the early twenties age bracket and older.

Repetition rates were substantially lower in second-level than first-level education. In public sector ordinary secondary education, there were 9.3 per cent repeaters out of the 443,300 pupils counted in 1970, and in public sector technical education, the rate was 7.0 per cent out of 122,000 pupils counted. These rates are considerably less than the 1970 estimated 16.5 per cent repeaters for first-level schooling.

Tables 41 and 42 show the trends of recurrent expenditure of both the public and private sectors on second-level education. After allowing for inflation, these will become the basis for our unit cost projections. We have already observed the rate of increase in total expenditures (see pages 24-30) but we can note a few features of the second-level breakdown of these costs. Salary costs still represent a very large proportion of total costs - not so high as in first-level education, but recorded material and maintenance costs in these data sources are relatively light. Contrast in this respect, the private sector, where a third or more of recurrent expenditure is devoted to non-salary costs.

The teaching force approximately doubled between 1960 and 1970, growing about 140 per cent in general second-level and about 80 per cent in technical second-level education. Their qualification level was improved much in the manner we have already observed for first-level education. The proportions of first-category (with degree) teachers rose from about 35 per cent to about 55 per cent, and those in the third category (not having completed studies) fell from about 41 to 31 per cent. Table 43 shows the major trends. Actually, although

Table 39. Enrolment rates of second-level education

	1960	1965	1970	1972
A. Second-level schooling				
Enrolments ('000)[1]	174.0	324.5	546.0	770.2[2]
Population in official schooling age group (12 to 17 years of age)	1 330.0	1 555.6	1 872.3	1 958.0
Apparent enrolment ratio	13.1%	20.9%	29.2%	39.3%[2]
B. Teacher-training and superior professional at second-level				
Enrolments ('000)[1]	4.0	15.4	24.4	22.4
Population in official schooling age group (18 to 21 years of age)	739.5	870.5	1 020.7	1 053.3
Apparent enrolment ratio	0.5%	1.8%	2.4%	2.1%

1. Full-time day schooling only.
2. Estimated at IIEP.

Source: Peru, Ministerio de Educación, Oficina Sectoral de Planificación, El Financiamento de los Gastos de Educación en el Perú, 1960-72, Lima 1973, for IIEP/Unesco Table II-14.

Table 40. Rates of second-level enrolment by age, 1970[1]

Age		Age population ('000) Total		Enrolled age population ('000) Total		Age-specific enrolment rates (per 1,000) Total	
5							
6							
7							
8							
9							
10		360.1		0.4		1.1	
11		351.3		0.7		2.0	
12	Official schooling ages	351.1	1 872.3	43.1	494.4	122.8	264.1
13		334.6		71.5		213.7	
14		318.2		98.0		308.0	
15		302.7		105.2		347.5	
16		288.9		97.2		336.4	
17		276.8		79.4		286.8	
18		266.7		54.7		205.1	
19		258.4		36.7		142.0	
20		251.2		22.7		90.4	
21 and over		3 973.0		64.7		16.3	
TOTAL		7 333.0		674.3		92.0	

[1] This table differs from Table 9 above in that it shows enrolment of an age group in secondary schooling only and regardless of which secondary grade.

Source: Ministry of Education.

Table 41. Trend of private secondary education expenditure by type (S/. '000, 000)

	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972
Administration	23.5	28.2	27.1	30.6	35.5	31.9	20.8	30.5	30.9	27.0	68.2	76.9	86.3
Salaries	64.6	77.8	74.5	89.0	93.0	114.2	128.9	143.1	159.5	186.6	187.8	241.2	283.6
Maintenance and materials	55.5	66.8	64.1	76.4	79.9	98.1	110.7	123.0	137.1	160.4	161.3	207.2	243.7
TOTAL	143.6	172.8	165.7	196.0	208.4	244.2	260.4	296.6	327.5	374.0	417.3	525.3	613.6

Source: Ministry of Education, Peru, Ministerio de Educación, Oficina Sectoral de Planificación, El Financiamento de los Gastos de Educación en el Perú, 1960-72. Lima, 1973, for IIEP/Unesco, Table III-1.

Table 42. Trend of recurrent public secondary education expenditure by type[1] (current S/'000, 000)

	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972
Administration[2]	2.4	3.2	4.9	12.3	19.1	42.3	49.1	31.9	41.6	37.1	60.4	76.7	114.1
Salaries	300.4	401.5	499.7	565.2	728.6	957.9	1 524.8	1 660.6	2 011.8	2 009.4	1 756.4	1 868.0	2 689.7
Maintenance and materials	-	-	-	1.1	43.4	54.8	73.2	70.3	60.0	55.6	92.4	63.9	160.1
Other expenditures	2.0	0.7	2.6	10.9	17.2	19.9	19.6	16.3	19.0	20.6	44.1	38.2	55.1
TOTAL	304.8	407.8	507.2	589.5	808.3	1 074.9	1 666.7	1 779.1	2 132.4	2 122.7	1 953.3	2 046.8	3 019.1

1. Expenditures given for 12 months for the years 1963, 1964, 1967, 1968 and 1969.
2. Estimated.

Source: Peru, Ministerio de Educación, Oficina Sectoral de Planificación. El Financiamiento de los Gastos de Educación en el Perú, 1960-72, Lima, 1973, for IIEP/Unesco, Table III-2.

Table 43. Qualification structure of secondary school teachers (number of teachers, percentages)

	1960	%	1966	%	1970	%	1972	%
Qualification level[1]								
- 1st category	5 160	35.7	7 975	35.8	15 961	54.1	16 694	54.0
- 2nd category	3 304	22.9	5 101	22.9	4 277	14.5	4 637	15.0
- 3rd category	5 986	41.4	9 199	41.3	9 248	31.4	9 584	31.0
TOTAL	14 450	100.0	22 275	100.0	29 486	100.0	30 915	100.0
Student-teacher ratio	12.1		14.6		18.5		26.6	

1. 1st category = generally, those with Pedagógico degree
   2nd category = generally, those without Pedagógico degree
   3rd category = generally, those without Pedagógico degree and without having completed pedagogical studies.

Source: Peru, Ministerio de Educación, Oficina Sectoral de Planificación, El Financiamiento de los Gastos de Educación en el Perú, 1960-72, Table II. 8, Lima, 1973, for IIEP/Unesco.

there were substantial increases in the teaching force in 1966-68, these levels were held more or less even for the rest of the decade. With the continuing increase in enrolments and the resulting rise in pupil/teacher ratio, this holding of teacher numbers was an important factor in restraining the rise in total costs and has become particularly significant in 1971 and 1972.[1] (However, as we shall see below, large salary increases in 1972 and 1973 began to reassert their powerful effects on the budget.) The number of second- and third-category teachers decreased absolutely in 1970 and at the same time the first category increased. To some extent, this change may have resulted from the replacement by more fully qualified teachers of temporary and less qualified ones which was made much easier at the end of the decade by the more abundant teacher supply coming out of the normal schools.

The forces just described resulted in a major increase in unit costs during the first few years of the decade followed by remarkably substantial decreases in the last half. These trends can be observed in both public and private instruction in Table 44. When inflationary effects are removed, it is seen, for instance, that real average salaries peaked (in 1970 soles terms) in 1967 (and in terms of a multiple of per capita GDP as well). These trends were similar to those we have already described in first-level education. By our calculation, the average real salary dropped by roughly one-third. Unit costs of public education were aided by this factor and by the factor of substantially higher student/teacher ratio. The latter rose by about 50 per cent. The net effect was a drop in real unit costs of almost 50 per cent to the lowest level in the decade. This trend continued in 1971 data. Similar effects are discernable in the data covering private education. It is interesting that total unit costs are about the same in public and private institutions but that salary unit costs are considerably less in the private ones. Since private school salary scales are not thought to be substantially lower than public school ones, this would imply an even more substantial rise in pupil/teacher ratios in that sector. The fall in unit costs from the peak levels of 1966 made it possible to continue substantial expansion of the educational system in spite of financially stringent times.

The last two years have seen substantial shifts in unit costs. In 1971, in spite of a 29 per cent rise in average teachers' salaries (21 per cent in real terms) unit costs did not rise due to the substantial (37 per cent) rise in the student/teacher ratio. However, when 1972 brought another 38 per cent rise in average salaries (29 per cent in real terms) and the student/teacher ratio rose only a more modest 5.5 per cent, unit costs began to move up sharply for the first time in several years, a trend that will no doubt be accentuated with the further large salary increases being granted in 1973. Of course the rise

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[1] There is some difficulty in dealing closely with teacher numbers and student/teacher ratios because of the incomplete accounting of part-time teachers. The data are not always fully stated, as would be ideal, in full-time equivalent terms.

Table 44. Trend of unit recurrent costs of secondary education (current and 1970 soles[1])

	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972
Public instruction													
Total recurrent unit costs	2 202.3	2 579.4	2 857.5	3 202.1	3 285.8	3 585.4	4 595.3	4 188.1	4 478.0	4 261.6	3 452.9	3 314.6	4 446.4
" 1970 soles	5 023.0	5 599.0	6 016.0	6 500.0	6 075.0	5 690.0	6 701.0	5 564.0	4 994.0	4 475.0	3 453.0	3 106.5	3 882.3
Salary unit costs	2 170.5	2 539.5	2 815.2	3 070.1	2 961.8	3 195.1	4 204.0	3 909.1	4 224.7	4 051.1	3 104.8	3 025.1	3 961.5
" 1970 soles	4 950.0	5 515.0	5 928.0	6 232.0	5 476.0	5 071.0	6 131.0	5 195.0	4 712.0	4 237.0	3 105.0	2 835.1	3 458.9
Private instruction													
Total recurrent unit costs	2 398.1	2 483.5	2 651.3	2 844.7	2 820.1	2 931.1	3 223.0	3 456.7	3 742.3	4 150.6	3 842.6	4 196.2	4 318.1
" 1970 soles	5 470.0	5 391.0	5 582.0	5 775.0	5 214.0	4 652.0	4 700.0	4 593.0	4 173.0	4 359.0	3 843.0	3 952.7	3 770.3
Salary unit costs	1 079.1	1 117.5	1 193.1	1 291.3	1 258.0	1 370.9	1 594.7	1 668.3	1 823.1	2 071.5	1 729.1	1 926.8	1 995.8
" 1970 soles	2 461.0	2 425.0	2 512.0	2 621.0	2 326.0	2 176.0	2 326.0	2 216.0	2 053.0	2 174.0	1 729.0	1 805.8	1 742.6
Public instruction													
Average teacher salary	20 789.0	25 659.9	31 229.3	34 240.0	37 137.5	43 003.4	61 429.4	60 295.6	68 734.8	70 838.3	59 567.3	76 852.9	106 108.6
" 1970 soles	47 420.0	55 710.0	65 759.0	69 509.0	68 658.0	68 578.0	89 586.0	80 106.0	76 661.0	74 394.0	59 567.0	72 008.3	92 647.0
As a multiple per capita GDP	3.7	4.2	4.5	4.7	4.3	4.4	5.4	4.8	4.7	4.6	3.4	3.9	4.9
Student/teacher ratio	12.1	12.9	13.1	13.3	14.1	14.6	14.7	15.0	15.7	17.2	18.5	25.4	26.8

1. Deflated by IIEP using cost-of-living index of personal expenditure. See Appendix I, Table VII.

Source: Peru, Ministerio de Educación, Oficina Sectoral de Planificación, El financiamiento de los gastos de educación en el Perú, 1960-72, Lima, 1973, for IIEP/Unesco Tables IV-4, IV-6.

rend of unit recurrent costs of secondary education (current and 1970 soles[1])

	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972
ation													
t													
	2 202.3	2 579.4	2 857.5	3 202.1	3 285.8	3 585.4	4 595.3	4 188.1	4 478.0	4 261.6	3 452.9	3 314.6	4 446.4
s	5 023.0	5 599.0	6 016.0	6 500.0	6 075.0	5 690.0	6 701.0	5 564.0	4 994.0	4 475.0	3 453.0	3 106.5	3 882.3
	2 170.5	2 559.5	2 815.2	3 070.1	2 961.8	3 195.1	4 204.0	3 909.1	4 224.7	4 031.1	3 104.8	3 025.1	3 961.5
s	4 950.0	5 515.0	5 928.0	6 232.0	5 476.0	5 071.0	6 131.0	5 193.0	4 712.0	4 237.0	3 105.0	2 835.1	3 458.9
ation													
t													
	2 398.1	2 483.5	2 651.3	2 844.7	2 820.1	2 931.1	3 223.0	3 456.7	3 742.3	4 150.6	3 842.6	4 196.2	4 318.1
s	5 470.0	5 391.0	5 582.0	5 775.0	5 214.0	4 652.0	4 700.0	4 593.0	4 173.0	4 359.0	3 843.0	3 932.7	3 770.3
	1 079.1	1 117.5	1 193.1	1 291.3	1 258.0	1 370.9	1 594.7	1 668.3	1 823.1	2 071.5	1 729.1	1 926.8	1 995.8
s	2 461.0	2 425.0	2 512.0	2 621.0	2 326.0	2 176.0	2 326.0	2 216.0	2 033.0	2 174.0	1 729.0	1 805.8	1 742.6
atio													
r													
	20 789.0	25 659.9	31 229.3	34 240.0	37 137.5	43 003.4	61 429.4	60 295.6	68 734.8	70 838.3	59 567.3	76 832.9	106 108.6
s	47 420.0	55 710.0	65 759.0	69 503.0	68 658.0	68 578.0	89 586.0	80 106.0	76 661.0	74 394.0	59 567.0	72 008.3	92 647.0
per	3.7	4.2	4.5	4.7	4.3	4.4	5.4	4.8	4.7	4.6	3.4	3.9	4.9
r	12.1	12.9	13.1	13.3	14.1	14.6	14.7	15.0	15.7	17.2	18.5	25.4	26.8

IIEP using cost-of-living index of personal expenditure. See Appendix I, Table VII.

Ministerio de Educación, Oficina Sectoral de Planificación, El financiamiento de los gastos de educación en
rú, 1960-72, Lima, 1973, for IIEP/Unesco Tables IV-4, IV-6.

in the student/teacher ratio is itself an impressive event - now roughly twice what it was for most of the last decade and much closer to what it is at the primary level. It would appear that either teachers are handling larger numbers of students generally, or that under-enrolled classrooms are coming up to a general norm or that there is a different accounting of the actual teaching force, or perhaps some combination of these factors. With the forthcoming restructuring of old secondary schooling, the impending relocation of schools, and the shifts in programme which are contemplated, it is possible that limits are now being reached for the aggregate student/teacher ratio.

Much of the vast expansion of second-level education has been the expression of strong social demand - parents increasingly expecting more education for their children than allowed in the primary programme with an eye toward better employment prospects and a better life. The public opinion reflecting these pressures has produced irresistable pressures for building, much of it carried out by isolated and independent action rather than by co-ordinated planning or rational location. Inasmuch as second-level education by its nature is less universally applicable at a given stage of a country's development, however desirable it might be, the rational location and apportionment of that which can be made available becomes an important policy variable. As we shall consider in detail below (see Chapter III), the Peruvian reform of the 1970's with its emphasis on a basic programme of nine years of schooling for the entire population is perhaps a strategic response to social demands for more schooling than is provided in the traditional first-level programme, and yet provides less than could be demanded in universal secondary education. This nine-year unit can be provided while at the same time some aspects of higher education are insulated from the population expectation that they will be universally provided. Those aspects of second-level education in the superior level (first cycle for example) are more particular with respect to educational form, future occupational preparation and the requirement of matching student interests and abilities, than traditional general secondary education might be.

(iii) Higher levels of education

The non-university higher levels of education in the public sector include teacher training (educación normal) and other intermediate level studies (intermedio), the latter comprising arts training and further commercial and technical studies for medium-level manpower. The development of the intermediate level (aside from teacher training) was designed to develop skills and to remove some of the pressure of the growing second-level graduate group seeking university entrance as the only route to higher training. As Tables 45 and 46 show, the numbers in the programme are still relatively small in spite of high growth rates.

Teachers are trained in special colleges (escuelas normales) dependent upon the Ministry of Education or attached to a university. Access to the colleges is governed by a special admission system announced each year.

Table 45. Intermediate level education, 1970 ('000 persons)

Age	Age population	Age enrolment	Age-specific enrolment rate ('000)
Total	5 935.6	5.887	0.992
14	318.2	0.011	0.035
15	302.7	1.044	3.449
16	288.9	0.977	3.382
17	276.8	0.586	2.117
18	266.7	0.867	3.251
19	258.3	0.428	1.657
20	251.2	0.434	1.728
21	244.4	0.320	1.309
22	236.9	0.301	1.271
23	227.9	0.237	1.040
24	218.1	0.157	0.720
25 and over	3 045.5	0.525	

Source: Oficina de estadística educativa, Ministerio de Educación, Peru, Oficina Sectoral de Planificación, El Financiamento de los Gastos de Educación en el Perú, 1960-72, Table II.9/10A, Lima, 1973, for IIEP/Unesco.

Table 46. Enrolments in higher technical institutes (nivel intermedio)

	1969			1970		
	Public	Private	Total	Public	Private	Total
Regional colleges (colegios regionales)	494	-	-	-	-	-
Agricultural (peritos agrícolas)	521	-	-	-	-	-
Polytechnics (polytécnicos)	1 759	-	-	-	-	-
TOTAL	2 774	-	-	5 875	4 050	9 925

Source: Ministerio de Educación, OSPE-OPYA, Dirección superior de educación profesional.

Up to the middle of the decade, the training period consisted of three years for primary and four years for other teacher trainees, but these periods have been lengthened. Secondary education teachers trained at a number of the universities take a five-year course. Completion of the course work and examination process results in the award of a diploma by the Ministry or the university, registered by the Ministry. In recent years, training diplomas have been accorded the status of university degrees, particularly as, toward the end of the decade, the programmes of the education faculties of the universities were converted to regular academic programmes within the university structure.

Table 47 shows the great increase in teacher training enrolments, which peaked in 1968 and declined thereafter as more selective admission policies were invoked to manage numbers in accordance with deliberate policy. The drop in total numbers from 1968 to 1970 was large, about 23 per cent in fact, and it was felt at all levels. Then in the period of the last two years, a further drop of 32 per cent was recorded, leaving numbers enrolled at about one-half the 1968 level. The number of teachers needed, like other aspects of 'capital', is a function of the growth in numbers of students, except for the replacement of retirements and resignations. Since growth rates of enrolments of pupils began to slow down at some levels, even though they remained growing, the absolute requirements for teachers began to fall. Supply was beginning to exceed demand, at least under given rates and conditions of teacher utilization in the educational system. The rise in student/teacher ratio, especially at second-level schools also diminished the use of new teachers. The data of Table 47 show the rise and fall in numbers, particularly in the private sector. The rise was partly the result of uncontrolled growth at very high rates in mid-decade in response to powerful demand pressures, as high teacher salaries and the strong aspiration for achieving more education added pressure for more teacher training places. The fall in enrolments was partly the result of the reversal of some of these forces. For instance, we have noted the relative decline of teacher salaries. There is also the greater provision of other higher level education opportunities which could attract the same students. Private normal education came under more control as well.

Table 49 shows a pattern of recurrent expenditures and unit costs that by now is familiar. It is similar to that which we have noted at the other levels of education, only the trends are, if anything, accentuated. Unit costs in teacher training rose immensely (over 80 per cent) in the first three years of the decade, peaking much earlier than at the lower school levels. From those levels, there was some retreat in the period 1963-67, and then a further reduction. The net result is that by 1970, unit costs were merely somewhat more than one-third of their 1963 peak levels, as estimated on a basis of calculated constant value 1970 soles. From 1965 onward, and particularly from 1968-70, enrolments were rising relative to recurrent outlays. In 1972, although normal school enrolments continued to drop, recurrent

Table 47. Teacher training enrolments ('000)

		1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972
Primary teachers	Public	2.8	4.0	5.1	5.4	6.9	7.4	7.9	8.6	10.2	9.6	8.3	6.8	5.4
	Private	0.6	0.6	0.4	1.2	5.2	5.5	6.0	5.8	5.0	2.4	1.5	1.3	1.0
	Total[1]	3.4	4.6	5.5	6.3	11.1	12.9	13.9	14.4	15.2	12.0	9.8	8.1	6.4
Secondary teachers	Public	0.2	0.3	0.3	0.4	0.5	1.1	2.5	1.8	2.4	4.9	4.8	4.2	3.7
	Private	0.1	0.1	0.4	0.4	0.6	0.6	1.6	1.3	3.2	1.0	0.6	0.5	0.5
	Total	0.3	0.4	0.7	0.8	1.1	1.7	4.1	3.1	5.6	5.9	5.4	4.7	4.2
Total teachers[1]	Public	3.4	4.5	5.4	5.9	7.5	9.1	10.9	12.1	14.8	16.7	15.5	12.7	11.2
	Private	0.6	0.7	0.9	1.7	4.9	6.3	8.1	7.7	9.2	4.3	3.0	2.4	1.4
	Total	4.0	5.2	6.3	7.6	12.4	15.4	19.0	19.8	24.0	21.0	18.5	15.1	12.6

1. Includes, in addition, enrolments of técnica, física, educación artística and educación familiar, teacher trainees.
Totals may not add because of rounding.

Source: Ministerio de Educación, Peru, Oficina Sectoral de Planificación, El Financiamento de los Gastos de Educación en el Perú, 1960-72, Tables II. 12. a-c, Lima, 1973, for IIEP/Unesco.

Table 48. Teacher training enrolment rates ('000), 1970

Age	Age enrolment	Age-specific enrolment rate (per 1,000)
TOTAL	18.5	3.29
15	0.1	0.33
16	0.1	0.35
17	0.5	1.81
18	1.1	4.12
19	1.8	6.97
20	2.8	10.35
21	2.7	11.05
22	2.5	10.55
23	2.1	9.22
24	1.8	8.25
25 - 29	2.7	2.80
30 - 34	0.3	0.37
35 - 39	0.1	0.15
40 and over	0.1	0.17

Source: Oficina de estadística educativa, Ministerio de Educación.

total costs rose so greatly - 34 per cent (25 per cent in real terms) due to the rise of both salary and non-salary expenditure - that unit costs also rose sharply again - 52 per cent (41 per cent in real terms). They had by no means reattained their high levels of the early sixties, but the evidence of the last few years shows the great difficulty of decreasing enrolments in an educational programme without experiencing rising unit costs. It is clear that recent shifts in the salary scales were being felt here as well. The trends just described show the remarkably accelerated rate of change of teacher education relative to pupil enrolment trends, and of course point up the special importance of planning for this sector of education.

(iv) University education

During the first half of the decade, university enrolments grew almost 15 per cent per annum, and during the second half more than 11 per cent per annum. Even in the last two years these high rates have continued - more than 12 per cent per annum from 1970 to 1972, rates which matched, and at times exceeded, those at the second level. As Tables VI and VII

Table 48. Teacher Training, Recurrent expenditures, Unit Costs

		1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972
Enrolments[1] ('000)	public	3.4	4.5	5.4	5.9	7.5	9.1	10.9	12.1	14.8	16.7	15.5	12.7	11.2
	private	0.6	0.7	0.9	1.7	4.9	6.3	8.1	7.7	9.2	4.3	3.0	2.4	1.4
	Total	4.0	5.2	6.3	7.6	12.4	15.4	19.0	19.8	24.0	21.0	18.5	15.1	12.6
Recurrent costs - public teacher training (current soles'000,000)[2]		23.8	36.8	51.2	83.6	90.0	99.5	151.6	176.0	192.9	164.2	155.9	138.0	184.8
Of which salary costs		23.7	36.7	51.0	80.7	72.5	81.5	129.6	159.8	181.4	155.5	137.3	116.7	154.7
Recurrent unit costs - public (current soles)[3]														
Total unit costs		7 000	8 178	9 481	14 169	12 000	10 934	13 908	14 545	13 034	9 832	10 058	10 866	16 500
Salary unit costs		6 971	8 156	9 444	13 678	9 667	8 956	11 890	13 206	12 257	9 311	8 858	9 188	13 813
Recurrent unit costs (1970 soles)[4]														
Total unit costs		15 967	17 755	19 964	28 764	22 185	17 356	20 283	19 324	14 537	10 326	10 058	10 183	14 407
Salary unit costs		15 901	17 707	19 886	27 766	17 872	14 216	17 340	17 545	13 671	9 778	8 858	8 611	12 060

1. Data of Table 47.

2. Contraloría general de la República. Ministerio de Educación, Peru, Oficina Sectoral de Planificación, El Financiamento de los Gastos de Educación en el Perú, 1960-72, Table III-4, Lima, 1973, for IIEP/Unesco.

3. Computed from data of this table.

4. Computed from IIEP cost-of-living index of personal consumption expenditure, See Appendix I, Table VII.

Teacher Training, Recurrent expenditures, Unit Costs

	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972
public	3.4	4.5	5.4	5.9	7.5	9.1	10.9	12.1	14.8	16.7	15.5	12.7	11.2
private	0.6	0.7	0.9	1.7	4.9	6.3	8.1	7.7	9.2	4.3	3.0	2.4	1.4
Total	4.0	5.2	6.3	7.6	12.4	15.4	19.0	19.8	24.0	21.0	18.5	15.1	12.6
osts - public ning es'000, 000)[2]	23.8	36.8	51.2	83.6	90.0	99.5	151.6	176.0	192.9	164.2	155.9	138.0	184.8
lary costs	23.7	36.7	51.0	80.7	72.5	81.5	129.6	159.8	181.4	155.5	137.3	116.7	154.7
nit costs - public es)[3]													
osts	7 000	8 178	9 481	14 169	12 000	10 934	13 908	14 545	13 034	9 832	10 058	10 866	16 500
costs	6 971	8 156	9 444	13 678	9 667	8 956	11 890	12 206	12 257	9 311	8 858	9 188	13 813
nit costs (1970 soles)[4]													
osts	15 967	17 755	19 964	28 764	22 185	17 356	20 283	19 324	14 537	10 326	10 058	10 183	14 407
costs	15 901	17 707	19 886	27 766	17 872	14 216	17 340	17 545	13 671	9 778	8 858	8 611	12 060

Table 47.

ría general de la República. Ministerio de Educación, Peru, Oficina Sectoral de Planificación, *ciamento de los Gastos de Educación en el Perú, 1960-72*, Table III-4, Lima, 1973, for IIEP/Unesco.

d from data of this table.

d from IIEP cost-of-living index of personal consumption expenditure, See Appendix I, Table VII.

of Appendix II indicate, the number of public universities grew from nine to twenty-one, while the number of private ones grew from one to over a dozen. Such growth was partly the result of social demand stemming from the increased output of the second-level system, and partly the proliferation of new establishments built under the pressure of local interests to obtain university programmes in their own area. More than a score of towns have become university centres.

The proportional position of private university enrolments has doubled from 10 per cent to about 20 per cent in the decade. Both branches, but particularly private education, had especially strong jumps in the 1964-65 period. Entering enrolments, leading the trends in total enrolments, went up more than 1.5 times in the public and more than 2.5 times in the private sector in that single year (see Tables 50 and 51). Such massive expansion of the universities was having an effect on the enrolment rate relative to the normal aged 18-21 year old group, up from 1 in 25 in 1960 to 1 in 8 by 1972, as the data of Table 51 indicate. The instructor force was also expanding similarly, so that no decisive trend shows in the student/faculty ratio for the period as a whole. The low rates of 8 to 9 students per instructor of the sixties increased abruptly with the absolute cut-back of teachers in 1969; but further hiring reversed that change in the following year. In the last two years the ratio has ranged between 10.7 and 11.6, generally higher than in the sixties but not showing the sharp increase observed at the secondary level.[1]

Apparently the social demand for university places has been growing just as rapidly as the number of places themselves, so that the difference between the large numbers seeking admission and the numbers that can be enrolled has continued. Table 52 shows that just over one-third of those seeking entrance to the universities have been admitted in recent years.[2] It is interesting that the number seeking admission in any year has been close to the numbers enrolled in the last year of secondary education during the previous year. We must remember that applicants in any one year are only partly made up of those just

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[1] Discussion with Peruvian education officials suggests that close scrutiny of teacher numbers and ratios which are based upon them can be deceiving, unless one bears in mind that such data are not (or only inadequately) presented on a full-time-equivalent basis. Thus in periods when, for example, there is an increasing restriction on the multiple holding of part-time jobs in the teaching profession, as has happened in recent periods in Peru, the apparent effect is to show a drop in the number of teachers, even when the amount of teaching time may not drop accordingly. It was suggested that this factor might explain at least part of the 1969 drop at the university level.

[2] The numbers applying (insenitos) may not truly reflect the full society demand. The fairly stable three-to-one ratio of applicants to enrollees may simply reflect an equilibrium reached between the rate at which the universities have expanded and that at which students can be admitted, given the limits on space available and thus the probability of being admitted.

Table 50. Trends of university enrolments

Universities	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972
Total enrolments													
Public	27 776	31 124	35 550	39 526	47 355	54 035	60 207	66 014	73 611	75 131	86 102	96 330[1]	108 520[1]
Private	3 207	3 869	5 146	6 506	6 875	10 506	13 716	17 495	20 292	22 260	24 450	27 170[1]	30 580[1]
% Private	10.4	11.1	12.6	14.1	12.7	16.3	18.6	20.4	21.6	22.9	22.1	-	-
TOTAL	30 983	34 993	40 696	46 032	54 230	64 541	73 923	83 509	93 903	97 391	110 552	123 500	139 100
Total entering enrolments													
Public	4 619	6 118	7 075	7 788	6 911	11 143	11 078	13 148	15 133	13 977	15 552	-	-
Private	811	942	1 502	1 931	1 737	4 623	6 027	6 351	7 135	7 905	7 799	-	-
% Private	14.9	13.3	17.5	19.9	20.1	29.3	35.2	32.6	32.0	36.1	33.4	-	-
TOTAL	5 430	7 060	8 577	9 719	8 648	15 766	17 105	19 499	22 268	21 882	23 351	-	-

1. IIEP estimate.

Source: Oficina Sectorial de Planificación, Oficina de Estadística Educativa, Dirección de Planificación del Consejo Nacional de la Universidad Peruana.

Trends of university enrolments

s	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972
ments													
	27 776	31 124	35 550	39 526	47 355	54 035	60 207	66 014	73 611	75 131	86 102	96 330[1]	108 520[1]
	3 207	3 869	5 146	6 506	6 875	10 506	13 716	17 495	20 292	22 260	24 450	27 170[1]	30 580[1]
	10.4	11.1	12.6	14.1	12.7	16.3	18.6	20.4	21.6	22.9	22.1	-	-
	30 983	34 993	40 696	46 032	54 230	64 541	73 923	83 509	93 903	97 391	110 552	123 500	139 100
ing enrolments													
	4 619	6 118	7 075	7 788	6 911	11 143	11 078	13 148	15 133	13 977	15 552	-	-
	811	942	1 502	1 931	1 737	4 623	6 027	6 351	7 135	7 905	7 799	-	-
	14.9	13.3	17.5	19.9	20.1	29.3	35.2	32.6	32.0	36.1	33.4	-	-
	5 430	7 060	8 577	9 719	8 648	15 766	17 105	19 499	22 268	21 882	23 351	-	-

timate.

icina Sectorial de Planificación, Oficina de Estadística Educativa, Dirección de Planificación del Consejo
cional de la Universidad Peruana.

Table 51. Trends of enrolments and instructors in university education

	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972
Enrolled	30 983	34 993	40 696	46 032	54 290	64 541	73 923	83 509	93 903	97 391	110 552	123 500	139 100
Entering enrolments	5 430	7 060	8 577	9 719	8 646	15 766	17 105	19 499	22 268	21 118[1]	23 986[1]	24 829[1]	-
Population aged 18-21	739 517	759 843	782 568	808 496	838 068	870 526	904 622	937 377	967 173	994 233	1 020 670	1 049 300	1 090 000
Rate of enrolments	0.04	0.05	0.05	0.06	0.06	0.07	0.08	0.09	0.10	0.10	0.11	0.12	0.13
Instructors	3 544	3 432	4 614	5 450	6 293	7 125	8 474	9 648	10 214	8 013	10 696	11 551	12 000
Student/ Instructor ratio	8.7	10.2	8.8	8.4	8.8	9.1	8.7	8.7	9.2	12.2	10.3	10.7	11.6

[1] From CONUP, Memoria 1971.

Source: Oficina de Estadística, Dirección de Planificación del Consejo Nacional de la Universidad Peruana, Peru, Ministerio de Educación, Oficina Sectoral de Planificación, El Financiamento de los Gastos de Educación en el Perú, 1960-72, Table II-19, Lima, 1973, for IIEP/Unesco.

rends of enrolments and instructors in university education

	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972
	30 983	34 993	40 696	46 032	54 230	64 541	73 923	83 509	93 903	97 391	110 552	123 500	139 100
	5 430	7 060	8 577	9 749	8 648	15 766	17 105	19 499	22 268	21 118[1]	23 986[1]	24 829[1]	-
d	739 517	759 843	782 568	808 496	838 068	870 526	904 622	937 377	967 173	994 233	1 020 670	1 040 300	1 090 000
	0.04	0.05	0.05	0.06	0.06	0.07	0.08	0.09	0.10	0.10	0.11	0.12	0.13
	3 544	3 432	4 614	5 450	6 193	7 125	8 474	9 648	10 214	8 013	10 696	11 551	12 000
	8.7	10.2	8.8	8.4	8.8	9.1	8.7	8.7	9.2	12.2	10.3	10.7	11.6

P, Memoria 1971.

ina de Estadística, Dirección de Planificación del Consejo Nacional de la Universidad Peruana, Peru, Ministerio de Educación, ina Sectoral de Planificación, El Financiamento de los Gastos de Educación en el Perú, 1960-72, Table II-19, Lima, 1973, for /Unesco.

Table 52. Transition from secondary to university

	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1975 projected
Enrolments, last year of secondary school									58 236	65 240	77 627		
Applicants seeking university places	14 665	16 762	19 990	24 561	28 312	24 349	43 804	52 720	57 858	60 40[illegible]	64 220	70 196	94 539
Demand ratio, row 2 compared to row 1, lagged one year[1]										1.04	.98	.90	
Applicants enrolled	5 429	7 060	8 577	9 715	8 648	15 766	17 105	19 499	22,268	21 118	23 9[illegible]5	24 829	36 099
Enrolment/Applicant ratio	.37	.42	.43	.39	.30	.65	.39	.37	.39	.35	.37	.35	.38

1. The ratio of applicants to university relative to previous years enrolments in the last year of secondary school. The former includes those reapplying from previous years, and thus the ratio may exceed 1.0.

Source: CONUP. Memoria 1971.

ransition from secondary to university

	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1975 projected
last year of school									58 236	65 240	77 627		
eking university	14 665	16 762	19 996	24 561	28 312	24 349	43 804	52 720	57 858	60 400	64 220	70 196	94 539
. row 2 o row 1, lagged										1.04	.98	.90	
nrolled	5 429	7 060	8 577	9 713	8 648	15 766	17 105	19 499	22,268	21 118	23 985	24 829	36 099
plicant	.37	.42	.43	.39	.30	.65	.39	.37	.39	.35	.37	.35	.38

o of applicants to university relative to previous years enrolments in the last year of secondary school.
er includes those reapplying from previous years, and thus the ratio may exceed 1.0.

UP. Memoria 1971.

completing the second level and to them is then added a large number who are applying or reapplying from previous years. The data for 1969, for instance, show that the number of applicants slightly exceeds preceding secondary enrolments. Where the secondary and university system has been growing rapidly, we see another example of delayed or somewhat overaged enrolments, just as we have observed at lower levels of schooling.

The regions vary in the proportion going to university from second level schooling, as the data in Table 54 suggest. The rates are highest (as might be expected) in the most developed areas, particularly Lima and the South, where an apparent ratio of between 40 per cent and 50 per cent have been enrolling, whereas much smaller proportions of the relatively fewer secondary leavers are enrolled in the North and Selva. The Central area occupies an intermediate position, but is somewhat below the national averages. Since students may migrate interregionally at the point of transition to university, the data may exaggerate somewhat the apparent differences between the regions. Much of the university building of the past decade has had the effect of dispersing higher education more widely in the country, just as secondary education has been dispersed.

Two sets of data showing the field distribution of enrolments at the end of the decade are presented in Table 53. Data 'A' allocate all university enrolments among subject field categories of specialization, whereas data 'B' include an allocation to the general studies cycle in addition to these subject categories. During the decade as a whole, according to data cited by Roland Paulston[1], proportions in the sciences have fallen by about one-half, and those in medicine by even more (12.2 to 5.6 per cent) while those in education and humanities have grown most. It is tempting perhaps, to deplore these tendencies, given the absolute needs for more better-trained technical people and more applied sciences in a growing economy which seeks growing independence from the importation of high-level skills. But it should be borne in mind that science, medicine and engineering were all growing in absolute numbers in the last years of the decade, and a part of the relative emphasis on the humanities and education may be an inevitable by-product of the rapid widening of university education to many more persons. Nonetheless, taking just the specialized students into account, enrolments in science at 2.9 per cent for 1970 (data 'B') would seem to point to a lack of emphasis in this area that could be a bottleneck. It must also be borne in mind that very large numbers of Peruvians are enrolled in universities elsewhere in South America, Europe and North America.[2] According to some estimates, these numbers run 28 000 to 30 000 students in 1970, a sizeable percentage of those enrolled at home.

Private university education is relatively more involved in education and humanities than it is in science, engineering, and medicine, as

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[1] Paulston, Roland G., Society, schools and progress in Peru, Pergamon, Oxford, 1971, esp. p.257.

[2] See discussion below, p. 146.

Table 53. University enrolments by field of specialization, various estimates ('000 enrolments)

Field of Study	1968 Public	1968 Private	1968 Total	1969 Public	1969 Private	1969 Total	1970 Public	1970 Private	1970 Total
DATA 'A'									
Science	4.3	0.5	4.8	4.4	0.5	4.9	5.1	0.5	5.6
Education	23.2	8.8	32.0	23.7	9.6	33.3	27.1	10.5	37.7
Humanities	26.5	8.2	34.7	27.0	9.0	36.0	31.0	9.9	40.9
Engineering + Architecture	14.2	2.3	16.5	14.5	2.5	17.0	16.6	2.7	19.4
Medicine	5.4	0.6	6.0	5.5	0.7	6.2	6.3	0.7	7.0
TOTAL	73.6	20.3	93.9	75.1	22.3	97.4	86.1	24.5	110.6
DATA 'B'									
General cycle				19.4	8.4	27.8	-	-	32.5
Science				2.2	0.1	2.3	-	-	3.2
Education				14.4	4.0	18.4	-	-	21.4
Humanities				19.3	6.2	25.5	-	-	31.4
Engineering + Architecture				12.7	1.5	14.2	-	-	16.9
Medicine				5.9	0.6	6.5	-	-	6.3
Other				1.2	1.4	2.6	-	-	-
TOTAL				75.1	22.3	97.4	-	-	110.6

Source: DATA 'A' : Oficina de estadística -Dirección de Planificación - CONUP - Oficina sectoral de Planificación - Ministerio de Educación, Oficina Sectoral de Planificación, El Financiamento de los Gastos de Educación en el Perú, 1960-72, Tables II-16A-B.

DATA 'B' : Boletín estadístico de la Oficina de Estadística.

Table 54. University Enrolment by region, recent years

	Entering Enrolments in University trends 1960-1971							Last-year secondary enrolments (A) compared to Entering University enrolments (B)								
	1960	1967	1968	1969	1970	est. 1971	1971 Index 1967=100	A 1968	B 1969	% A to B	A 1969	B 1970	% A to B	A 1970	B 1971	% A to B
Regions																
South	875	3 689	4 582	4 165	5 092	5 111	139	10 028	4 165	.42	10 600	5 092	.48	13 127	5 111	.39
Central	1 065	1 362	1 977	1 874	2 952	2 199	161	6 754	1 874	.28	7 543	2 952	.39	8 440	2 199	.26
North	1 076	1 855	2 157	1 161	625[1]	2 029	109	13 203	1 161	.09	15 586	625	.04	18 444	2 029	.11
Selva	-	294	161	51	111	153	52	2 187	51	.03	2 360	111	.05	2 969	153	.05
Lima-met.	2 325	12 299	13 391	13 867	15 205	15 337	125	26 064	13 869	.53	29 151	15 205	.52	34 647	15 337	.44
TOTAL	5 341	19 499	22 268	21 118	23 985	24 829	127	58 236	21 118	.36	65 240	23 985	.37	77 627	24 829	.32

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1. Estimated 1,600 is a more normal figure for this year.

Table 55 shows. Its stronger recent growth relative to that in the public sector coincides with relative specialization in the most popular fields. Perhaps its response to 'social demand' forces in recent years has been at least a strong determinant of its particular pattern of growth and specialization. 90 per cent of science, medicine and engineering are in the public sector whereas the humanities and education proportions are 75 per cent or less.

Unit costs (recurrent expenditures per student) vary substantially by subject field, an important consideration for the planning and financing of a sector whose overall unit costs are several times those at lower levels of education. It is hard to give a perfectly accurate indication of unit costs by subject field because of the difficulties of accounting and allocating all costs, some of which are overhead or general in nature (e.g. administrative costs), and because of the shifting pattern of student enrolment among specialties and between general studies and specialized study. Neverthless estimates are given in Table 58. One set of estimates is based upon allocating all enrolments and all expenditures among five subject field categories (see Table 59) and the other set attempts an allocation among these same fields but using enrolments from which have been subtracted those enrollees in the general cycle. By either reckoning, it is clear that science, engineering and medicine are several times costlier per student than fields such as education and the humanities.

The overall expenditures by subject field (see Table 59) show that the sciences took almost 40 per cent of all expenditures (more than half of subject-designated ones), even though they enrolled a far smaller proportion of the students (less than a quarter of the subject-designated ones). As important as the provision of these science fields is, their high unit costs will have to be taken into account in planning, particularly where popular pressures are strong to widen access to all areas of higher education.

Table 55. Percentage field distribution of university enrolments, 1970

Fields	(%) Field distribution	(%) Public-private distribution		
Data 'A'	Total	Public	Private	Total
Science	5.1	90.0	10.0	100.0
Education	34.1	72.0	28.0	100.0
Humanities	37.0	75.9	24.1	100.0
Engineering	17.5	85.9	14.1	100.0
Medicine	6.3	89.2	10.8	100.0
TOTAL	100.0	77.9	22.1	100.0

Source: IIEP calculated from Table 53, Data 'A'.

Table 56. Estimated field distribution of university enrolments with general cycle, 1970

Fields	(%) Field distribution with general cycle	Enrolments ('000) with general cycle		
Data 'B'	Total	Public	Private	Total
General cycle	29.1	22.6	9.6	32.2
Science	2.9	3.0	0.2	3.2
Education	19.2	16.5	4.7	21.2
Humanities	28.1	23.6	7.5	31.1
Engineering and Architecture	15.1	15.0	1.7	16.7
Medicine	5.6	5.6	0.6	6.2
TOTAL	100.0	86.1	24.5	110.6

Source: IIEP calculations from Table 53, Data 'B': 1970 totals allocated on the basis of the 1969 public-private breakdown.

Table 57. Recurrent expenditure of public higher education by type, 1970

Type of expenditure	(S/. '000,000)	(%)
Total	1 158.2	100.00
Administration	474.5	40.96
Salary costs	490.2	42.32
Material costs	17.4	1.50
Maintenance	108.9	9.40
Student services	49.2	4.24
Other	18.0	1.55

Source: Balances de las Universidades Nacionales, Archivo 30200, MAD.j. Peru, Ministerio de Educación. Oficina Sectoral de Planificación, El Financiamento de Los Gastos de Educación en el Perú, 1960-72, Lima 1973, for IIEP/Unesco, Table III-8-A.

Table 58. Estimates of recurrent public university unit costs by subject field, 1970

Fields	Unit cost by field, allocating all costs and all enrolments to fields[1]	Unit cost by field, allocating only field-designated costs enrolments[2]
Science	16 118	17 500
Education	6 137	6 436
Humanities	9 477	7 953
Engineering and architecture	25 795	18 233
Medicine	29 778	21 392
TOTAL	13 451	13 451

1. Allocates all costs of Table 59 in proportion as field-designated costs are allocated. Uses 'A' enrolment data of Table 53. All enrolments are allocated to subject fields.
2. Subtracts 'other' costs of Table 59. Uses 'B' enrolment data of Table 56.

Source: IIEP

Table 59. Recurrent expenditure of public higher education allocated by subject field, 1970.

Fields	Field-allocated sums total (S/. 000,000)	(%)
Science	52.5	4.5
Education	106.2	9.2
Humanities	187.7	16.2
Engineering, architecture and agronomy	273.5	23.6
Medicine	119.8	10.3
Other	418.4	36.1
TOTAL	1 158.1	100.0

Source: Peru, Ministerio de Educación, Oficina sectoral de planificación, El financiamento de los gastos de educación en el Perú, 1960-72, Lima, 1973, for IIEP/Unesco, Table III. 8. B, Balances de las Universidades Nacionales, Archivo 30200.

Recurrent expenditures by function are also illustrated for 1970 in Table 57. Salary costs are a considerably smaller proportion of total costs than was found at lower levels of education. Material costs, student services, maintenance and administration absorb roughly half the total. Even at this level of education, however, material costs were only 1.5 per cent.

Looking at the trends of university expenditure and finance in the decade of the sixties (see Tables 60 and 61), we see a picture similar to the fluctuation we observed at lower levels of education. Price-deflated figures showing expenditures and sources of finance of public universities show growth rates of resources comparable in magnitude and timing to those just seen for student enrolments. Expenditures peaked in real terms in 1967, but thereafter have receded slightly. With the robust growth of student numbers, unit costs have shown more fluctuation and a greater tendency to fall since 1967, particularly where deflated figures are used (see the last line of Table 61). In the last three years shown, unit costs (averaging just over 13,000 1970 soles) are at their lowest level since 1961, and have receded about one-third from their 1967 peak.

Considering sources of public university finance in the period 1960 to 1972, government grants have risen in importance from 50 per cent to almost 80 per cent of the total, while the place of fees, for example, has dropped from 12 per cent to about 5 per cent of the total. External aid from international sources is not a major continuing item.

To complete our survey of levels of education, the out-of-school programmes involving skill and craft training (competencia and artesanal) and adult literacy programmes must be considered briefly. Tables 62 and 63 show enrolments and enrolment rates over the past decade, and 1970 cost data. The craft (artesanal) programmes have grown much more rapidly than the skill (competencia) programmes, and most of the effort has been recorded in the publicly supported sector. Literacy programmes peaked in 1963 but with the spread of regular and evening first-level education, these special adult programmes are seen to be much smaller by the end of the decade.

(v) Summary

We have looked at a number of factors of rapid change in the sixties which have affected educational costs. Although in the decade of the seventies a major educational reform which will bring its own series of changes in the cost parameters of education has been introduced, a number of features we have already analyzed will also play their part in the years ahead. We have noted strong population growth and an even stronger enrolment growth; the latter has been composed of the reduction of deficits at the normal age for each level of schooling, and also of increased educational opportunities for those beyond normal age.

Table 60. Trends in finance of public higher education by source (current S/. '000,000 1970)

	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970
Government grants	78.0	106.3	178.7	247.4	392.3	570.2	756.8	1 014.7	1 123.4	1 112.3	1 203.0
Fees	18.8	27.8	31.5	32.7	13.4	22.8	41.7	27.9	24.1	58.0	75.2
Donations	-	1.1	2.6	2.2	0.5	0.8	-	-	-	6.4	7.8
Owned resources	11.2	29.9	25.0	32.7	31.1	51.9	59.3	109.7	153.8	92.7	120.3
Bilateral external aid	0.4	0.8	0.2	-	2.0	3.8	0.3	12.1	-	-	2.5
Other resources	47.8	66.9	120.5	140.4	133.3	166.3	231.6	153.8	213.6	87.2	112.3
TOTAL	156.2	232.8	358.5	455.2	572.6	815.8	1 089.7	1 318.2	1 514.9	1 356.6	1 521.1
TOTAL (1970 soles)	356.3	505.4	754.9	923.7	1 058.6	1 294.9	1 589.2	1 751.3	1 689.6	1 424.7	1 521.1

Source: Oficina nacional interuniversitaria de planificación - consejo interuniversitario, dirección del fondo nacional - consejo nacional de la Universidad Peruana, Peru, Ministerio de Educación, Oficina Sectoral de Planificación, El financiamento de los gastos de educación en el Peru, 1960-72, Lima, 1973, for IIEP/Unesco, Table III.11.

Table 61. Trends of unit recurrent expenditures for public higher education

	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972
Public university recurrent expenditures (S/. '000,000 current)	131.6	186.3	255.6	342.4	418.1	607.7	608.2	969.9	1 024.6	1 085.4	1 158.2	1 359.2	1 661.0
Public university enrolments	27 776	31 124	35 550	3[illegible] 526	47 355	54 035	60 207	66 014	73 611	75 131	86 102	96 330	108 520
Unit recurrent expenditures - current soles	4 738	5 986	7 190	8 663	8 829	11 246	10 102	14 692	13 919	14 447	13 451	14 110	15 306
Unit recurrent expenditures 1970 soles	10 807	12 996	15 140	17 586	16 323	17 851	14 732	19 519	15 524	15 172	13 451	13 224	13 364

Source: Expenditure data from Appendix II, Table I; enrolments data from Table 50, calculations IIEP.

rends of unit recurrent expenditures for public higher education

	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972
rsity penditures current)	131.6	186.3	255.6	342.4	418.1	607.7	608.2	969.9	1 024.6	1 085.4	1 158.2	1 359.2	1 661.0
rsity	27 776	31 124	35 550	39 526	47 355	54 035	60 207	66 014	73 611	75 131	86 102	96 330	106 520
nt - s	4 738	5 986	7 190	8 663	8 829	11 246	10 102	14 692	13 919	14 447	13 451	14 110	15 306
nt	10 807	12 996	15 140	17 586	16 323	17 851	14 732	19 519	15 524	15 172	13 451	13 224	13 364

nditure data from Appendix II, Table I; enrolments data from Table 50, calculations IIEP.

Table 62. Trend of enrolment recurrent expenditures for professional out-of-school and literacy education

		1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970
Vocational training												
Enrolments[1] ('000)	Public	4.0	3.6	3.2	3.9	7.4	11.3	13.5	17.4	21.8	25.8	29.9
	Private	-	-	-	-	-	-	-	-	3.4	2.6	3.4
	Total	4.0	3.6	3.2	3.9	7.4	11.3	13.5	17.4	25.2	28.4	33.3
Course[1] Enrolments ('000)	Skill (competencia)	3.4	2.8	2.2	2.9	4.0	4.5	4.8	5.3	9.2	9.8	11.6
	Artesanal	0.6	0.8	1.0	1.0	3.4	6.8	8.7	12.1	16.0	19.6	21.7
	Total	4.0	3.6	3.2	3.9	7.4	11.3	13.5	17.4	25.2	28.4	33.3
Expenditures for vocational training[2] (S/. '000,000)												80.4
Unit recurrent costs												2 414.0
Literacy programmes												
Enrolments[3] ('000)		51.2	87.3	95.3	176.8	167.9	101.8	29.6	26.6	25.0	28.0	75.0
Recurrent expenditures[2] (S/. '000,000)												49.6
Unit recurrent costs												661.0

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1. Oficina sectoral de planificación - Oficina de estadística educativa.

2. Ministerio de Educación, Archivo 30200.

3. Ministerio de Educación.

Trend of enrolment recurrent expenditures for professional out-of-school and literacy education

		1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970
training												
[1]	Public	4.0	3.6	3.2	3.9	7.4	11.3	13.5	17.4	21.8	25.8	29.9
	Private	-	-	-	-	-	-	-	-	3.4	2.6	3.4
	Total	4.0	3.6	3.2	3.9	7.4	11.3	13.5	17.4	25.2	28.4	33.3
Skill (competencia)		3.4	2.8	2.2	2.9	4.0	4.5	4.8	5.3	9.2	9.8	11.6
Artesanal		0.6	0.8	1.0	1.0	3.4	6.8	8.7	12.1	16.0	19.6	21.7
Total		4.0	3.6	3.2	3.9	7.4	11.3	13.5	17.4	25.2	28.4	33.3
es for vocational (S/. '000,000)												80.4
rent costs												2 414.0
rogrammes												
[3]		51.2	87.3	95.3	376.8	167.9	101.8	29.6	26.6	25.0	28.0	75.0
expenditures[2] 000)												49.6
rent costs												661.0

sectoral de planificación - Oficina de estadística educativa.

rio de Educación, Archivo 30200.

rio de Educación.

Table 63. Enrolment rates in vocational training[1] programmes

Age	Age population	Age enrolment	Age enrolment rate (per 1,000)
Total	7 343.9	33.4	4.55
10	360.1	0.1	0.28
11	362.5	0.2	0.55
12	351.1	0.3	0.85
13	334.6	0.5	1.49
14	318.2	1.1	3.46
15	302.7	1.8	5.95
16	288.9	2.4	8.31
17	276.8	2.7	9.75
18	266.7	2.7	10.12
19	258.3	2.4	9.29
20	251.2	2.0	7.96
21	244.4	1.7	6.96
22	236.9	1.6	6.75
23	227.9	1.4	6.14
24	218.1	1.1	5.04
25 - 29	965.3	3.4	3.52
30 - 34	816.2	2.6	3.19
35 - 39	683.5	2.1	3.07
40 and over	580.5	3.3	5.69

1. Artesanal and competencia only.

Source: Oficina de estadística educativa, Ministerio de Educación.

Although *apparent* enrolment ratios at the first level are over 100 per cent, showing that the aggregate capacity of primary schooling is equivalent to the numbers of the normal-age population of primary schooling, about one-quarter of that age group is still not being schooled. Their numbers are offset by over-age enrolments. Thus the 'capacity' is still not adequate either physically or geographically, or in terms of human teaching resources to meet the requirements of true universal schooling. The expansion of first-level schooling to the last one-quarter of the normal age group will be especially demanding. Borrowing from the precise economic terminology of increasing costs, from here onward the *marginal* costs of 'universalization' of the normal age group may be greater than existing *average* costs, because the latter have been more affected by a system responding *relatively* (though certainly by no means exclusively) to urbanizing population trends. When we consider features of reform such as nuclearization and bilingual schooling, we see that these problems of the final extension of primary schooling are in the process of being seriously considered today.

We have observed the induced growth of the teaching force and induced pulls on salary scales, which rose substantially during the middle years of the sixties up to the point of general economic crisis in 1967. These salaries have been moderated significantly at all levels, largely as a result of holding salaries in current soles as general inflationary forces continued their annual effects. Student/teacher ratios have increased, particularly in second-level education and more recently in higher level education. These forces taken together have caused substantial falls in the estimated real unit costs; thus we can understand how the educational budget for the state can have sustained the decline relative to GDP and relative to total government expenditures that we noted in earlier sections. In terms simply of teacher and pupil numbers, and without accounting for qualitative factors, substantial shifts in cost parameters occurred in the past decade.

Considering salary policy somewhat further, attention has been drawn to the marked fluctuation, particularly in price-deflated terms, of teacher salaries, and the effects of these on total educational spending trends. It is worth noting that, difficult as it is to effect an ideal management of salary conditions for a large force of teachers who are in the equivalent of central government employment (and public salary scales are also enforced in the private sector) - a force that covers the entire country - salary policy has important potential for encouraging appropriate responses relative to national needs. Swinging periods of prosperity and depression should be avoided, both to give teachers more stable income in real terms, and to avoid rapid shifts in employment prospects. Finally, the most difficult achievement is a utilization of salary policy to encourage the attainment of educational goals. Such goals and salary policy clearly must reflect Peruvian policies and Peruvian preferences if they are to succeed.[1]

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[1] Salary policy is discussed in more detail in Chapter VI below.

In Chapter VI, we will take some of the aggregative variables that have just been analyzed and test projections of costs to 1980. To do that we will turn to an anlysis of economic performance which has conditioned education in the past decade, and test some economic projections. First, however, we must describe the comprehensive education reform which is taking place in the seventies.

III. A description of the new education reform

In this chapter we describe the new Peruvian educational reform including the recently introduced system of nuclearization. Since a major objective of this entire study is an analysis of educational trends affecting educational finance in the seventies, the study in Chapter VI below will have to consider more than the aggregates of students, teachers and projected current and capital expenditures, the features that provide a common core to the country studies in this series. It will also have to take into account the ambitious qualitative changes in the organisation and proposed methods of education which are expected to come into being during the decade, and attempt to gauge some of the major future costs of reform.

Decreto Ley No. 19 326 published in March 1972, the new General Law on Education, culminates three years of study, official and public discussion, preparation and preliminary drafts. There was wide acknowledgement that much of the educational system was archaic and ineffective. At its promulgation, the new law was described as a complete reform, part of the larger process of social transformation[1], and not just another series of partial improvements or a set of isolated measures. The law embraces the entire educational system. It is seen to consider the parts of the educational system in relation to one another and to other objectives in the domain of social and economic reform. The reform is in the process of gradual implementation during the decade of the seventies with 1980 as the target date for completion.[2]

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1. See for example the contemporary press coverage in *Peruvian Times*, Lima, and Bondy, Augusto Salazar, 'On educational reform in Peru', *Prospects*, Vol. II, No. 4, Winter 1972, Unesco, 31 March 1972, statements of the President and Minister of Education.
2. Note that although the concepts of the reform are discussed here in their entirety, the scheduling of its future implementation is discussed below in Section I of this chapter.

In Chapter VI, we will take some of the aggregative variables that have just been analysed and test projections of costs to 1980. To do that we will turn to an analysis of economic performance which has conditioned education in the past decade, and test some economic projections. First, however, we must describe the comprehensive education reform which is taking place in the seventies.

A. THE PHILOSOPHY OF REFORM

The preamble of the law speaks of some of the most pressing needs for change. It cites the disparity in the distribution of property and power in society, and makes frequent reference to the need to transform the underdeveloped and 'dependent' status of the country. More specifically, it is critical of the low productivity of education relative to the percentage of G. D. P. it utilizes, the failure to solve the problem of illiteracy, the special neglect of children in 'marginal social groups', the insufficiency of mechanisms of correction and improvement, and a selective and discriminatory character which directs the system too often toward the service of a favoured minority. The law also criticizes a system whose teaching methods have emphasized 'verbalism' and 'memorization' and an overly 'academic' approach. According to the preamble statement, there has been inadequate training and selection of teachers, bureaucratization, administrative and financial 'distortion', and an inefficient use of plant and equipment.

The new law derives from a complete restatement of the philosophy and methods to be employed in Peruvian education. A number of its features are recognizable from the recent world-wide debate on educational reform and from Latin American reform experience in particular. There is a strong emphasis on a closer relationship between education and work. Students will combine schooling and working experience. The system will better adapt to occupational needs of the country. The law endorses life-long or continuing education. It emphasizes service to the poor regions and those persons previously disadvantaged or ignored by reason of regional origin or social status. Community participation and decentralization and deconcentration of school administration and policy formation are to be encouraged. The school system is to end Peruvian 'dependence' - both the international dependence of imported culture and methods and the domination of metropolitan norms. Education is to reflect Peruvian traditions and values; within the country it is to respect the separate ethical traditions of its various peoples. Bilingualism in schooling is newly endorsed. A number of the specific structural features of the reform is intended to give these principles meaning, as we shall see below.

The Peruvian reform has attracted considerable international interest because it is in keeping with recent trends of educational reform elsewhere. The Edgar Faure report[1] cites the Peruvian example as 'a thorough overhaul of the system based on the principles of life-long education'. It notes the reform is intended to break two equally pernicious vices, authoritarian State control and discriminatory 'privatism', and welcomes the fact that the Peruvian example promises to be one which substitutes 'activity which the community and its members may themselves develop independently' for the exclusive and rigid formal system which has all too often locked the teacher and pupil in a one-way relationship for a limited time on both sides. The conviction that education must stress learning to learn, that it should be integrated with work and everyday life, that it should be a process facilitating adaptation to change, these are features which the international study finds are sorely needed in most country systems.

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[1] Faure, Edgar et al, Learning to be, Harrap, London, 1972, especially pp. 182-183, Unesco.

B. STRUCTURAL SHIFT IN SCHOOLING LEVELS

The reform envisages a significant change in the arrangement of traditional school levels. In Chart 5[1], we see that education under the reform is divided longitudinally into three sections. The introductory (Inicial) generally lasts for one year but also includes all welfare and educational services, both formal and out-of-school, for children under six (those for whom the programme is designed), and comparable introductory work for adults beginning their schooling. The reform puts heavy emphasis on the desirability of pre-school conditioning. The second section is the fundamental unit (Básica) which replaces the old first-level system; it provides for nine grades of basic schooling which it is hoped will become the unit of universal schooling for the entire population. Comprising nine grades, and broken into three cycles of four, two and three years, respectively, it also replaces part of the old second level of schooling. For pupils above the normal age in this programme, adolescents and young adults, the emphasis is on vocational training. Three stages of instruction are contemplated beyond the basic level; together they make up higher (Superior) education. The first cycle will be obligatory for those going on to university; it consists of three to four years of training, technical in orientation, to be offered in newly-created High Schools of Professional Education (Escuelas Superiores de Educación Profesional) called ESEP's. This cycle leads toward a technical diploma (Bachillerato Profesional) frequently a terminal one. The second cycle consists of

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1. Chart 5 enables a comparison between terminology of the past system and that of the reform and the newly-published statistics. Because the terminology of the educational system is considerably different from that of most other countries it is difficult to apply precisely the labels of primary, secondary and higher education. In the rest of this study we will use the terminology of Chart 5 following Unesco labeling where possible and Spanish labels where additional distinction is required.

Normal age	Grade	REFORM			Suggested use of Unesco terminology	OLD SYSTEM
5	Pre-school	INITIAL				Pre-school
6	1	BASICA	1	1st cycle	FIRST LEVEL	Transition
7	2		2			1
8	3		3			2
9	4		4			3
10	5		5	2nd cycle		4
11	6		6			5
12	7		7	3rd cycle	SECOND LEVEL	1
13	8		8			2
14	9		9			3
15	10	SUPERIOR	1	1st cycle		4
16	11		2			5
17	12		3			1
18	13		1	2nd cycle	THIRD LEVEL	2
19	14		2			3
20	15		3			4
21	16		4			5
22	•		1	3rd cycle	GRADUATE STUDIES	
•	•		2			
•	•		•			
•	•		•			

Chart 5. Comparison of reform and old system

university or equivalent level professional courses leading to the 'Licenciatura' or 'Maestría' degree. The highest level is for doctoral studies, the control and quality of which is to be tightened. [1]

C. BASIC REFORM FEATURES

The reform attempts to correct a traditional relationship between education and work - one which it is alleged has too often in the past been negative and demeaning to work, particularly manual work. Starting from the premise that much unemployment is due not to a lack of work but to a lack of trained workers for the jobs that require them, the school system particularly in the first cycle of the higher level, is to be oriented toward vocational skills required in the local labour markets. The traditional separation between vocational and general education is to be ended at all levels, and this process of integration is epitomized in the ESEP with its technical degree required even for students going on to university. Work periods are also expected of students; some of these occur even between the cycles of the 'Básica', and blocs of time in the first cycle of superior education are also dedicated for such experience. Those receiving degrees in the first or second cycle of higher education are expected to work for the State for a period up to 14 months after the completion of the degree, to extend the scope of services available, especially in backward areas, and to provide students with more practical experience in their fields and with a keener appreciation of the problems of the country. A National Office for the Civil Service of Graduates is contemplated in the Law to administer this programme. In addition, students studying abroad under scholarship will be obligated to work for the State an equal number of years, and for those on loans or under private financing, a proportional but lesser period will be required.

The concern with the role of work and work training in education is expressed in the priority given to adult (laboral) Basic Working Education, which is to provide the equivalent of the basic education to adults and adolescents, generally over the age of 15, who have dropped out of school or who have missed early schooling opportunities. This programme is to give emphasis to literacy training, specific training to the level of semi-qualified worker, and other educational and cultural offerings for the cultivation of awareness (concientización). The courses in the adult programme are to avoid an emphasis on purely academic subjects. Sites for adult education are to be the usual education centres for the basic level, the ESEP's, and special community and work centres.

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[1] Because of the emphasis on the nine-year basic course as the unit of universal education and the variety of professional and vocational courses which follow immediately at the 'Superior' or higher level, it is difficult to make direct comparison to the position of second-level education, but where we are constrained to do so we suggest considering the last cycle of basic education plus the first cycle of higher education as the equivalent of second-level education.

The Law emphasizes the importance of broad community participation in education at all levels, as well as the more traditional role of teachers and educational officials. Community participation is not desired simply to avoid the twin evils of authority from above and private discrimination (el estatismo autoritario y el privatismo discriminador). It is also to be encouraged because of the need for communities which are better prepared for dialogue and responsible participation in a range of matters. If education is a right and obligation of all, and involves self-education, life-long education, and non-formal education, in which all participate all the time, it requires a mobilization of the community in a freer and more permanent way to discharge duties which had been earlier reserved solely to the schools. Community participation is not just a question of curriculum but of drawing on a larger base of decision-making, resources, and local effort. We shall see, particularly below in the discussion of the nuclearization system, the more specific ways in which these principles are supposed to be incorporated in practice.

Another side to the question of broader participation in education is the decentralization of educational administration. Regional zones, nine in total, are being set up to decentralize at least a part of the administration which has hitherto come almost solely from Lima. The Law speaks of the need to adapt educational needs to local conditions and to the immense regional diversity of the country. Greater regional and local autonomy is to be an antidote to the rigid uniformity, dependence upon authority, and lack of initiative which the Law states have maintained a regime of internal colonialism, strengthening the system of metropolitan domination, especially over areas removed from the centre of power. Part of the concern with community participation is to re-establish a multiplicity of schooling methods and to reassert the values of each ethnic group. This process, enhanced for example by the introduction of bilingualism to enable first learning to occur in the local language and avoid 'forced castellanization' and the 'degrading of aboriginal languages' is part of the larger goal of building a vigorous national culture. A new emphasis on co-education and the improvement of opportunities for women are also viewed as methods of building a community spirit of participation. As we shall see the provisions to be made for parent and other community associations to participate in the guidance of schools are specific means by which these goals are to be implemented.

The purpose behind the introduction of bilingualism (vernacular language and Spanish) is to extend schooling to large numbers of children particularly in the Sierra, who are monolingual and cannot go to school or have difficulty learning if they do, and to facilitate literacy programmes among adults, and to prevent the 'cultural alienation' which is enforced by previous emphasis on Spanish. The Law at the same time recognizes the importance of Spanish as the common language of communication among all Peruvians. All teachers will henceforth be required as part of their training to learn a vernacular language.

A number of other features are included in the law. The importance of nutrition and health care for early education is noted, to break the syndrome of poverty and malnutrition leading to physical weakness and lack of concentration and initiative, producing in turn poor early school performance and disillusionment. Improved orientation and counselling of students is recognized as important. The school system is to undertake this function through better evaluation and attention to student progress and choice at all levels. There is to be great effort to 'promote' education among those not receiving it. Elements of greater curricular flexibility, automatic promotion, and more flexible individual timing are intended to exclude repetition as such.

The law links educational reform with agricultural and industrial and other social reforms. It has been noted in other contexts that agricultural reform for example, if it involves the development of co-operatives and other local agencies to replace previous management forms, must draw on more sophisticated community participation and individual participation in local planning and the making of decisions. Thus there is a link between the experience of community participation in education and other transforming tasks.

We turn now to a description in greater detail of the various educational levels of the new system.

D. THE NEW EDUCATIONAL LEVELS - INITIAL EDUCATION

The provision of initial (Inicial) education, the period of the first five years of the child's life and the special initial year of pre-schooling training, is viewed as one of the most significant concerns of the reform. Recognizing this period as 'an age of development most decisive for human existence' the Law stresses the need for a multi-disciplinary, multi-agency co-ordinated approach in co-operation with the Ministries of Health and Housing. The services at this educational level are to attend to a variety of physical, social and psychological needs, such as nutrition, emotional security, better family and particularly mother-child relations, and the strengthening of the family unit. 'Experimental inter-disciplinary programmes' are contemplated, but there are also substantial goals for expansion of the initial pre-school year for five year-olds. Initial education is to be offered in special centres, nursery schools, day-care centres, and non-institutional programmes for those not attending such centres, and through programmes for parents and the communities.

(i) Basic education

The nine-year basic (Básica) education is the replacement for previous primary and secondary levels, and the essential unit through which the goals of Peruvian educational reform are to be realized - integral development of the person, and his basic qualification for a life of work and active participation in the social process. Ordinarily offered at age 6-15 in its regular form (Básica regular) it is also offered in a somewhat different form of Basic Working Education (Básica laboral) for adults and adolescents. The basic unit is free and obligatory, and open without the prerequisite of initial education. A precise and detailed definition of the curriculum is not given in the Law. Indeed, it is to be 'flexible, based on advances in science and technology, adequate to the social and economic reality of the community, and adjusted to the level of maturity of the pupils'. It should also constitute a 'theoretical and practical unity'. In practice it is expected to reflect regional conditions, and to be flexible with respect to the individual student. Each year of studies is to be viewed as a collection of experiences and educational content which the student may acquire in a variable amount of time, taking into account personal conditions and the 'exigencies of the educational process'. Promotion from grade to grade is not necessarily fixed to a chronological period. The pupil will be promoted 'automatically' as he has met the requisite minimum experience for each level, thus excluding ordinary repetition of grades. This individual treatment of students is made possible by the provision of a special dossier for each student, which indicates his total achievement as he proceeds. At the end of the entire basic schooling unit he receives a general certificate of studies. The basic schooling is broken into three cycles of four, two, and three years, each of which forms an 'integral unit'.

E. BASIC WORKING EDUCATION (LABORAL)

The Basic Working Education (Básica laboral) for those not able to take the regular básica differs from it in many ways suitable to the purposes of adults. It is to be strongly 'non-academic' and not a copy of traditional education. Its three cycles in the same nine-year overall period are of two, three and four years' length successively, with a flexibility and treatment designed to culminate in work qualification.[1] Child-oriented education is inevitably alien to adults' interests, the Law states, and often repugnant to their dignity. The objectives of working education are to eradicate illiteracy and impart critical awareness and an orientation toward self-education on a continuing basis. The outcome of the entire unit is to produce a semi-qualified worker. There are no prerequisites for entry into the system, which is adaptable according to previous experience. Working Education will also reflect special regional needs for work qualification. The features of automatic promotion, personal and curricular flexibility, and certification on the basis of individual records are to be applied just as in the regular version of Basic Education. The courses will generally be given in Centres of Basic Education, in ESEP's, and in work and community centres. In general, a non-formal, out-of-school type education (no escolarizada) is preferred. Special regulations, yet to be published, will further define its methods.

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[1] The greater practical orientation of 'laboral' education accounts for the different length and timing of its cycles compared to regular education.

F. THE ESEP'S (ESCUELAS SUPERIORES DE EDUCACION PROFESIONAL)

Higher education, in three cycles, starts with the programme of the new High Schools of Professional Education (ESEP's), leading to a professional degree. This three-year first cycle is a major novel feature of the reform. It is a part of neither the universities nor the schools providing Basic Education. It is to be essentially technical training leading to a professional qualification in such fields as mechanics, electricity, radio, social services, nursing, education, journalism, art, or library studies, but with an 'adequate percentage' of courses of general studies aside from such vocational training. The purpose of the ESEP's is to offer vocational training to all students by avoiding the 'artificialities and discriminatory break which is often made between the academic and the technical'. Under the old system the student was forced to go to school for 14 years to get a technical degree, whereas under the reform it would take only 12 years, with much earlier technical emphasis. In this way the cycle is viewed as not only one of the most important forces to improve education, but to extend 'higher' education to large sectors of the population without access to it today. Entrance will be automatic[1] to those wanting it who have completed Basic Education in any of its forms.

The programme, not described in detail in the Law, will last six to eight semesters (a semester is defined as 90 working days), and will be administered by a system of credits and the progressive awarding of certificates, so that the student can begin work while still completing the studies leading to the final degree. The work done in these special schools - state, private or co-operative - will be supervised by the Ministry of Education. The creation, location, and special properties of the schools will reflect both national and regional priorities. The Law points out that the election of a speciality in this first cycle does not necessarily determine the line of study for those going on to the next (university) cycle. It is interesting that for all students going to university, the Bachillerato Profesional is required regardless of its often technical and terminal quality.

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[1] Although entrance is automatic, it is not clear that this cycle will immediately become a part of universal schooling. Article 124 appears to qualify the principle of universality, 'taking account of the social demand for existing institutions and the plans and projects of national development'. Indeed, below we explore the possibility that the ESEP's may be a means of limiting 'excess' and unproductive demand for higher levels of education that may have been engendered by the traditional organisation.

G. UNIVERSITY LEVEL

The second cycle of higher education, university work leading to a 'Licenciatura' or 'Maestría' degree, is open to those with the first cycle degree plus other requirements set by the individual universities, and by the other institutions offering advanced studies, such as officers' colleges in the Armed Services and police, theological seminaries, and specially authorized institutes of higher study. The Law envisages an improvement in the organisation of universities and an appropriate response on their part to the new aims and methods of the reform, but sections on the organisation and structure of universities are shorter than in earlier drafts of the Law, and it is implied that a large part of that response is to be decided by the universities themselves. Governing bodies of the universities are to be autonomous and more democratic, with a large degree of student participation (one-third of the total membership) and more support from younger teachers and other elements, including non-academic elements from the community. The fact that the resources of the universities may be drawn upon by contract with the Ministry of Education to supply some of the teaching and training requirements for the new ESEP's is significant.

Further university planning is to culminate in a General Statute of the System of Peruvian Universities to be produced by a commission with representatives from each university, again with one-third student representation. An organisation corresponding to the Ministry of Education will establish each year the number of available university spaces and will make its recommendations, taking into account 'social demand and the projections of national planning'.

Until now each university has had its own examinations for admission, held on different dates, and for the student this often meant taking several examinations. Recently there have been attempts to bring some unification of dates and procedures. Admission to university is also secured by the privilege given to each secondary school to send two of its students to the regional university.

(i) Doctoral studies and other modes

Third cycle higher education is composed of doctoral programmes, in which the development of research priorities assumes a special national importance. These programmes are to be carried out in university programmes or in a new National Institute for Higher Studies, which will also apparently have some role in promoting co-ordination of research, the training of university teachers, and the best use of the resources of all the universities at this level. It will also offer instruction and research in important fields not covered by the universities.

Special Professional Training C.P.E. (Calificación Profesional Extraordinaria), which with reform is replacing the old Intermediate (Intermedio) Level, represents the means of pulling together the entire system for non-formal vocational and skill training for workers, both adolescent and adult, who are not necessarily in the basic system. It is envisaged as the means by which each economic sector is to prepare and reinforce the skills of its own occupations. It is considered a priority area for raising the productivity of workers, and the role of the educational sector is one of promotion and co-ordination among an existing network of sectoral programmes. Programme co-ordination and eventually certification will become a growing responsibility of this programme. An organisation attached to the Ministry of Education but with special participation of the Ministry of Labour is envisaged.

Similar attention is to be progressively applied to special education for the handicapped and others not able to participate in normal cycles. Centres of Special Education will be attached to Initial and Basic Centres.

Educational Extension is viewed as having a special role of non-formal education, awaking a critical awareness of needs and of the possibilities of action in depressed rural areas, which have been too often segregated from national life, neglected, and insufficiently valued for their unique characteristics. The approach is less to be 'rural education' than 'education for rural areas', having in mind the specific traits of these areas. There is to be a priority on support for agrarian reform, and non-school activities. It is recognized that a purely 'school' solution to their problems of health, housing, agriculture, and community organisation is not likely to exist.

H. NUCLEARIZATION

The Peruvian educational reform is to be implemented by means of a new organisational pattern of schools, the system of Community Educational Nuclei, called NEC's (Núcleos Educativos Comunales).[1] Each

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[1] Although many features of the proposed nuclearization are totally new, this concept in various forms goes back to the thirties in Latin America and to the forties in Peru. See for example, Paulston, Roland M., Society, schools and progress in Peru, Pergamon, Oxford, 1971, for discussion of the earlier experience.

NEC with its own territorial delineation is the micro-planning and local administrative unit of the educational system. Units are grouped under zonal administration, with several zones grouped under each of the nine regional administrations (see Chart 6 below). In the programming unit of each Zonal Directorate, there is a team for planning and implementing the introduction of the NEC's and for adjusting their boundaries. It is clear that nuclearization is expected to be the device by which the major philosophical objectives of reform are to be carried out.

Nuclearization is implemented by The Regulations of the NEC's, spelled out in a decree of February 1973.[1] The objectives are to mobilize family and community members and community resources in the service of education, to integrate the work of the different levels and types of schools, and to promote optimum use of resources. The nucleus includes all schools (now called Education Centres) at the Initial and Basic levels - whether state, private, co-operative, or otherwise - operating within its territory. (Universities and ESEP's are also mentioned, but 'conforming to their own legal basis', so that their inclusion would appear not to be one of administration but rather one of promoted co-operation, at the initiative of the director of the NEC.) The zonal authorities creating the nucleus designate a Base Centre, one usually with facilities for all three cycles of basic education, and adequate provision and central location to act as the centre for community education. The Directorate of the NEC also resides in the Base Centre. The Base, which may be augmented by Sub-Base Centres for particularly large territorial nuclei in areas of sparse settlement, will contain the facilities of teams and equipment, of workshops, mobile facilities, laboratories, libraries, social and welfare services, to be used by all the educational centres of the NEC. Part of the reason for the centralization of facilities or co-ordinated use of dispersed facilities is to have the base act as agent of more efficient use, or more efficient planning of location.

Observation of early planning efforts in Peru indicates to the author that the base school may often be the better equipped school within a larger area to which more specialized needs could be referred. In a nucleus in the rivers areas of the eastern region for example, students in the third cycle might board at the location of the Base School to get its specialized facilities, whereas in the urban setting, the physical grouping of facilities at the base seems less important.

The Director of the NEC is appointed for three years only and cannot succeed himself in office. The appointment comes from the Zonal Director, but from a list of three names nominated within the community of the NEC. He must be a Peruvian citizen, with substantial preparation and experience as a teacher and some administrative or supervisory experience, who will devote full time to his director duties. After his term he must return to teaching. Besides being charged with

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1. Peru, Decreto Supremo 005-73-ED, Reglamento de los Núcleos Educativos Comunales, 20 February 1973.

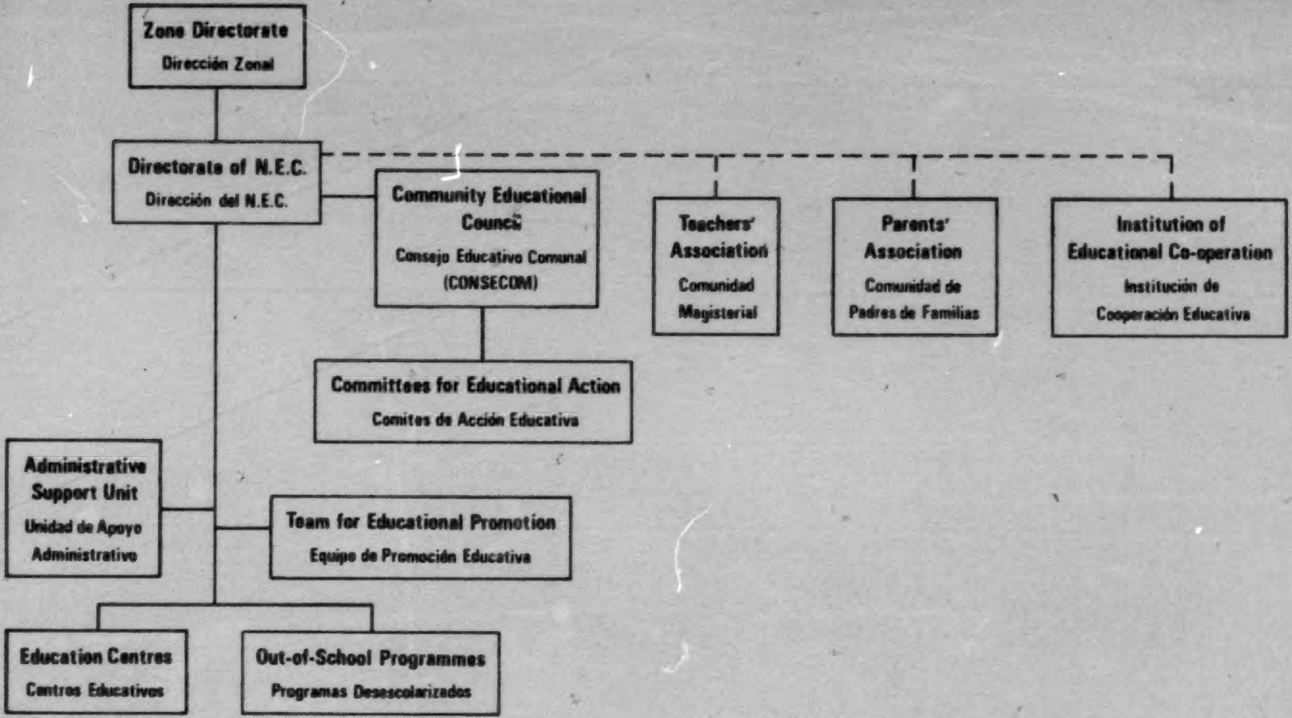

Zone Directorate
Dirección Zonal
Directorate of N.E.C.
Dirección del N.E.C.
Community Educational Council
Consejo Educativo Comunal (CONSECOM)
Teachers' Association
Comunidad Magisterial
Parents' Association
Comunidad de Padres de Familias
Institution of Educational Co-operation
Institución de Cooperación Educativa
Committees for Educational Action
Comites de Acción Educativa
Administrative Support Unit
Unidad de Apoyo Administrativo
Team for Educational Promotion
Equipo de Promoción Educativa
Education Centres
Centros Educativos
Out-of-School Programmes
Programas Desescolarizados

Chart 6. Structural organisation of the Community Educational Nucleus general administration of the NEC, he must promote co-operation of its component educational centres, and generally supervise and evaluate their work, approve the regulations and promote the work of the various community organisations that the NEC structure calls for, co-ordinate the training and improvement of the regular NEC staff, deal with private schools who are to make periodic reports to him, and answer to the Zonal authorities who channel higher levels of planning and decision-making through him. There is a separate Director of the Base Centre, who may deputize for him.

The NEC (see Chart 6) includes a number of organisations which implement community participation. A Community Educational Council, CONSECOM, (Consejo Educativo Comunal) is the most important for advising the Director and creating various committees of educational action. Its membership of 10 to 20 persons is to be 40 per cent teachers, 30 per cent representatives of families, and 30 per cent representatives of other local institutions (except political ones). Constituent organisations are set up to represent these groups separately and to provide the nominees to CONSECOM. There is to be a teachers' organisation (Comunidad Magisterial) and a parents' organisation (Comunidad de Padres de Familia). The other interests of the community are to be represented in an institute of educational co-operation (Institución de Cooperación Educativa) chosen through an assembly, called by the local governments of the area where the NEC is located, which elects its representative to CONSECOM. The chairman of CONSECOM sits for one year only. CONSECOM represents the community, advises the Director of the NEC on educational policy and plans, provides the nominations list (three names) for a new NEC Director, 'recognizes' Directors of private schools, and designates the Committees of Educational Action (Comites de Acción Educativa).

The community Committees of Educational Action are designed to promote aid and understanding from outside the schools. They may deal with matters such as sports, nutritional improvement, vaccination programmes, safety, theatre and recreation, workshops and manual training efforts. Each CONSECOM is also expected to set up an important committee of pensions, bursaries, and registration to assure equity and understanding in administering the standards that are set by regulations in effect.

The NEC also will have a staff support apparatus, an Administrative Support Unit (Unidad de Apoyo Administrativo) to plan, organise and administer the adequate utilization of personnel, financial and material resources of the NEC and a Team for Education Promotion (Equipo de Promoción Educativa) to aid in educational planning, the development of special projects, the drawing and updating of the educational map of the NEC, and assisting the Director in pedagogical and technical matters.

The Directors of the individual Educational Centres are appointed by the Director of NEC from lists of nominees provided by CONSECOM, again for a fixed term (the regulations do not state what it is), after which they are expected to return to teaching.

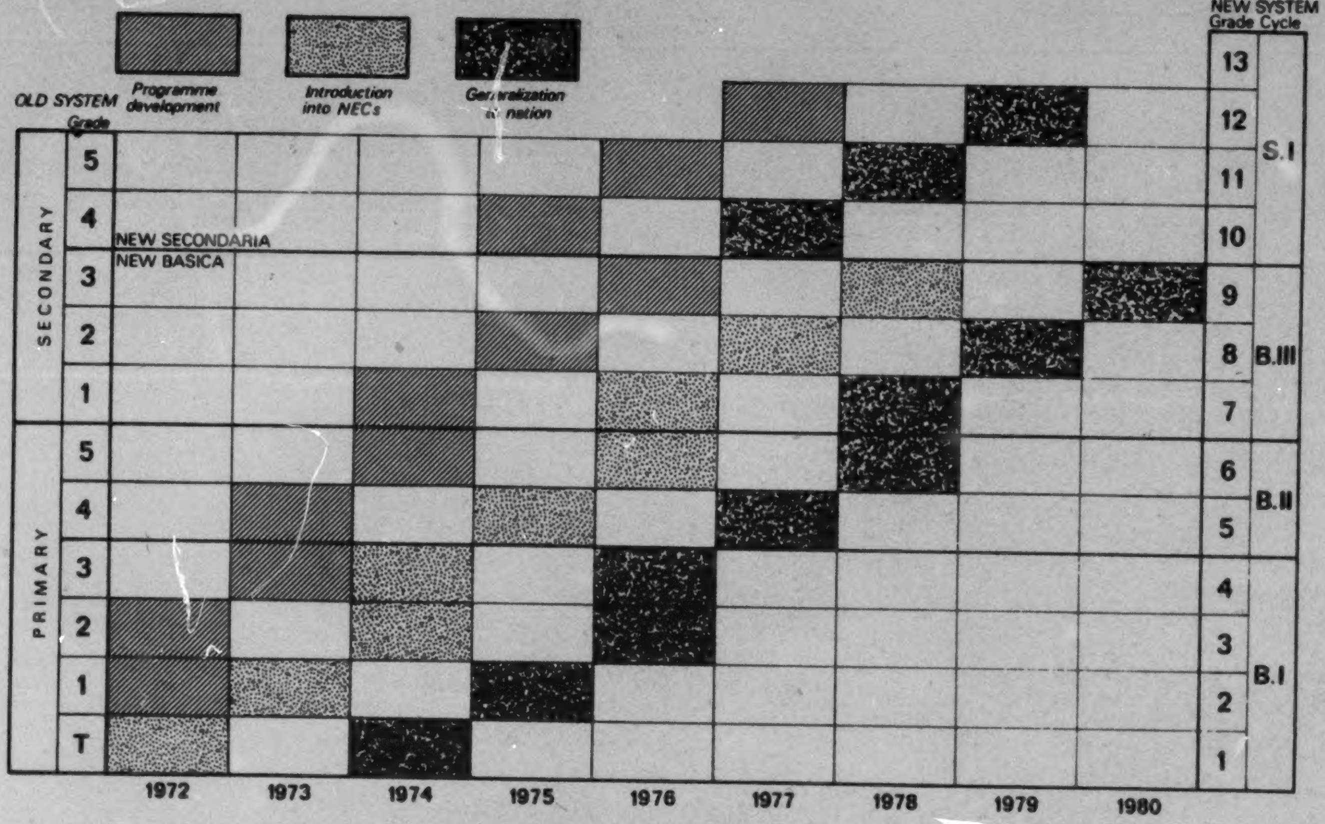
I. TIMING OF THE IMPLEMENTATION OF REFORM

The programme of reform is to be introduced over the seventies according to a timetable worked out in the Educational Plan 1971-75. The tasks of reform implementation are threefold, each illustrated in Chart 7. First, there is the development of new programmes for each grade of the 'Básica' and the new ESEP's. This is to be done on a schedule that involves progressive planning of the grades to be completed by mid-decade for 'Básica' and in the 1975-77 period for intensive planning of the ESEP's. Second, there is the gradual introduction of the new grades of the 'Básica' into the NEC's as they are developed. This occurs at one or two grades per year for the period from 1972-78. Since the NEC system itself is being developed and expanded at the same time, this introduction of grades of the new system will progress upward in a given school and horizontally across new schools being nuclearized throughout the country. Third, on a schedule following the introduction of new grades into the growing NEC's, will be a schedule of generalizing the new curriculum across the whole country grade by grade. These three plans of action are illustrated in the chart. Some experimental work in ESEP's will begin in the mid-seventies with selected schools and classes, about two years ahead of general introduction.

The evening (Laboral) programme is also being developed and introduced into the NEC's, and then generalized to the country as a whole in similar fashion. However, because a high priority is being given to adult education, it is expected that it will be introduced on a timetable, accelerated ahead of the day programmes for the basic level by about two years.

As Table 64 shows, nuclearization itself is being gradually introduced in the period up to 1980. In 1972, 132 nuclei were established, 140 more in 1973, and during 1974 the total number in place is expected to reach 479, approximately 55 per cent of the almost 900 units eventually expected to cover the entire country. Those begun in the last year have started with the first and second year of the new programme on an experimental basis, along with the work of setting up the administrative apparatus and constituent community structure. The fact that both the third cycle of 'Básica' and the ESEP's do not really get started until mid-decade gives some planning time for their special vocational, technical and professional programmes.

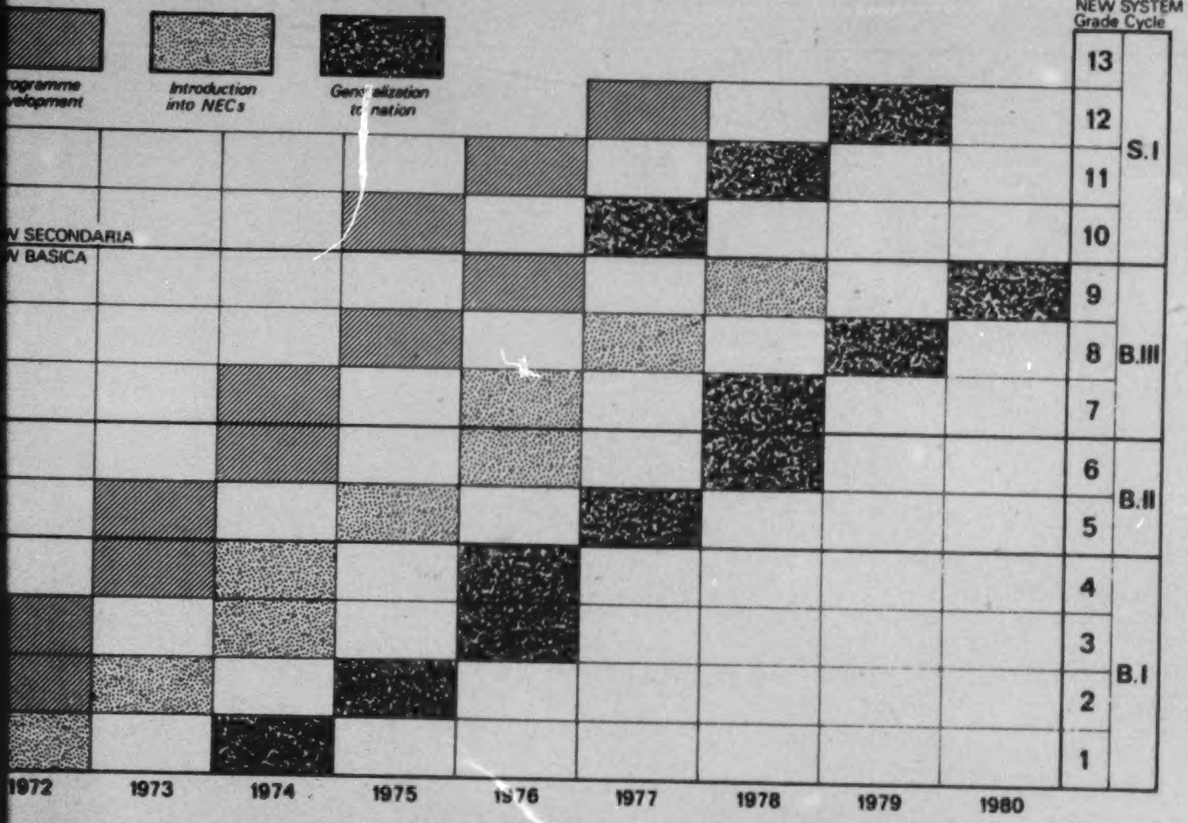
The pace of implementation will thus be the result of a complex of actions all occurring in simultaneous and progressive fashion: planning of the new curriculum and teaching methods, pilot testing of new programmes, phasing out of the old secondary system, the organisation of the nuclei themselves, construction, relocation, re-equipping and reassignment of school buildings and other facilities, and as we shall discuss in greater detail below, the establishment of the vital teacher retraining process.



▨ Programme development
░ Introduction into NECs
■ Generalization to nation

OLD SYSTEM	Grade	1972	1973	1974	1975	1976	1977	1978	1979	1980	NEW SYSTEM Grade	Cycle
											13	S.I
							▨		■		12	
SECONDARY	5					▨		■			11	
	4				▨		■				10	
NEW SECONDARIA / NEW BASICA												
	3					▨		░		■	9	B.III
	2				▨		░		■		8	
	1			▨		░		■			7	
PRIMARY	5			▨		░		■			6	B.II
	4		▨		░		■				5	
	3		▨	░		■					4	B.I
	2	▨		░		■					3	
	1	▨	░		■						2	
	T	░		■							1	

Chart 7. Timetable for implementation of reform in regular programme



▨ ogramme velopment

░ Introduction into NECs

▓ Generalization to nation

Grade	Cycle	1972	1973	1974	1975	1976	1977	1978	1979	1980
13	S.I									
12							▨		▓	
11						▨		▓		
10					▨		▓			
9	B.III					▨		░		▓
8					▨		░		▓	
7				▨		░		▓		
6	B.II			▨		░		▓		
5			▨		░		▓			
4	B.I		▨	░		▓				
3		▨		░		▓				
2		▨	░		▓					
1		░		▓						

metable for implementation of reform in regular programme

Table 64. Timetable of implementation of the system of nuclearization

1971	Development of doctrine, policies, strategy, methodology and planning of nuclearization.
1972	Establishment of 138 NEC's. Diffusion of the nuclearization model.
1973	Establishment of 32 per cent of total NEC's. Generalization of nuclearization from a budgetary point of view.
1974	Establishment of 55 per cent of total NEC's. Rationalization of human, physical and financial resources of the NEC's.
1975	Establishment of 80 per cent of total NEC's.
1976	Generalization of nuclearization.

Source: Peru, Ministerio de Educación, Oficina Sectoral de Planificación, *Plan Nacional de Desarrollo para 1971-75*, Vol. VIII, Plan de Educación (reajustado), Lima, June 1972, Table 4-01.

J. OBSERVATIONS OF EARLIER PLANNING EFFORTS ON NEC'S

It is important to note that the NEC's have neither their own strong budgeting function, nor large elements of support from local finance. Since the discussion above has been based largely on the plan for nuclearization as presented in the Law, it deals largely with intentions for the future rather than with observations of experience already realized. However, field experience suggests some of the more interesting questions which reform will raise.[1] Peru, unlike some of its Latin American neighbours also adopting some form of nuclearization, intends to pursue it fully in both urban and rural settings at the same time. In fact there may be a need in the urban areas to complete the nuclearization process early, perhaps by 1973-74, because of the extra cross pressures that could build up if areas side by side were on different systems. Nuclearization may bring less immediate locational advantages in the urban areas where population is dense and locational patterns of resources are already fixed. Locational benefits may be achieved only as new building can take place in the long run. Nuclei in the cities may encompass population groups as large as 80 000, whereas in the rural areas they may include ten to thirty thousand. The use of sub-bases is one way of coping with a very large geographical area of the NEC in places of low population density. The typical pattern of urban and rural nuclei is illustrated in Charts 8 and 9.

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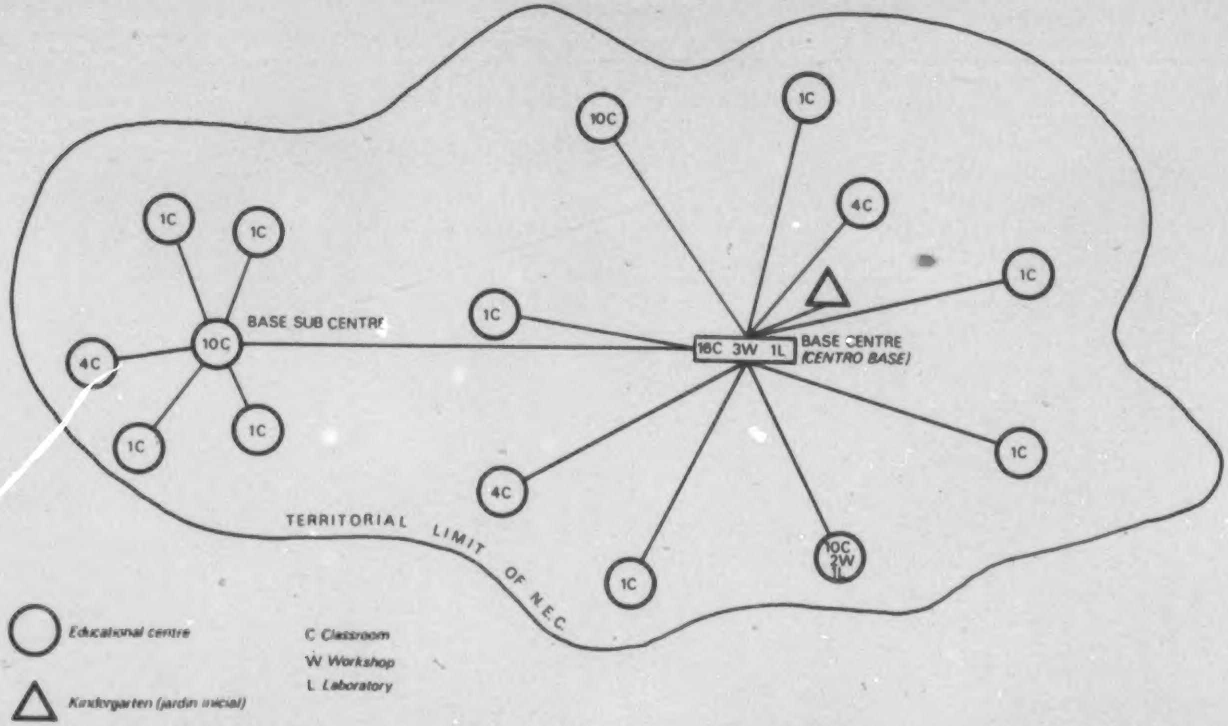
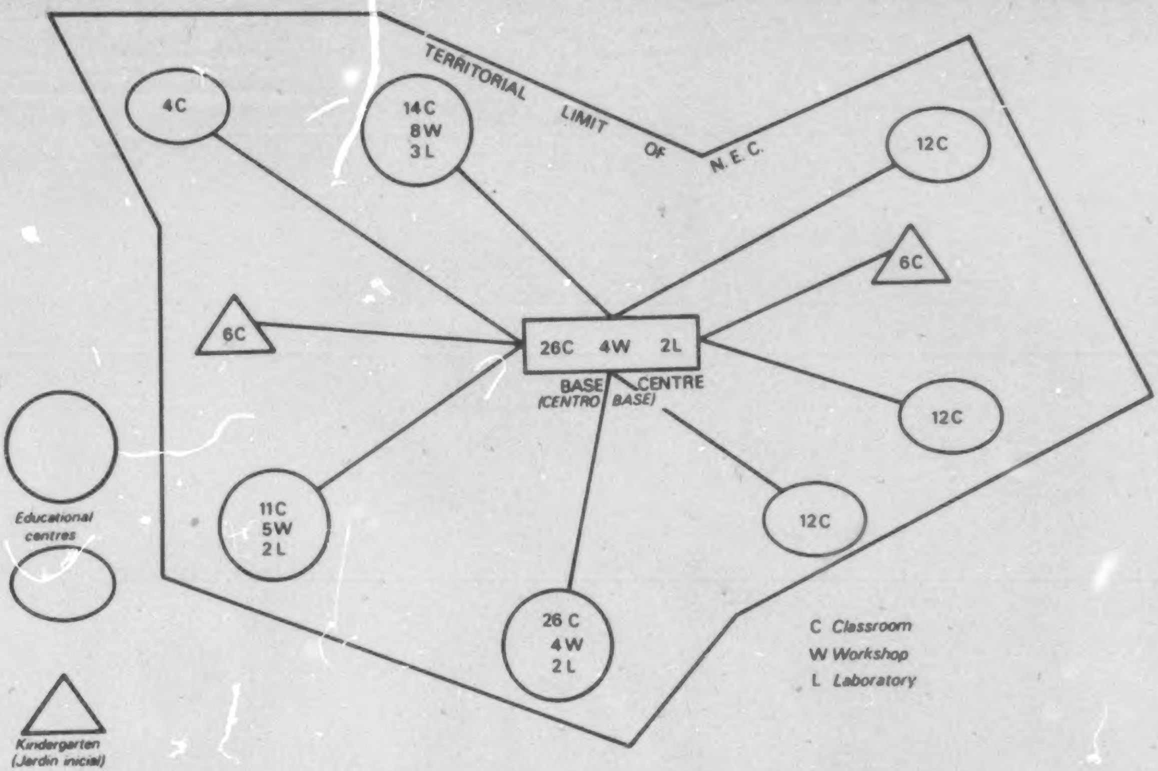
[1] Based upon author field mission in April-May 1973.


10C
1C
4C
1C
1C
1C
BASE SUB CENTRE
10C
4C
1C
1C
18C 3W 1L
BASE CENTRE
(CENTRO BASE)
1C
4C
1C
10C 2W 1L
1C
TERRITORIAL LIMIT OF N.E.C.
Educational centre
Kindergarten (jardin inicial)
C Classroom
W Workshop
L Laboratory

Source: IIEP adapted from Peru, Ministerio de Educación, Oficina Sectoral de Planificación, Plan Nacional de Desarrollo para 1971-75, Vol. VIII, Plan de Educación (Reajustado), Lima, June 1972.

Chart 8. Typical community educational nucleus (NEC) in a rural area


TERRITORIAL LIMIT OF N.E.C.
4C
14C 8W 3L
12C
6C
6C
26C 4W 2L
BASE CENTRE (CENTRO BASE)
12C
11C 5W 2L
12C
26 C 4W 2L
Educational centres
Kindergarten (Jardin inicial)
C Classroom
W Workshop
L Laboratory

Source: IIEP adapted from Peru, Ministerio de Educación, Oficina Sectoral de Planificación, Plan Nacional de Desarrollo para 1971-75, Vol. VIII, Plan de Educación (Reajustado), Lima, June 1972.

Chart 9. Typical community educational nucleus (NEC) in an urban area

One question that might be asked is how the Director of a NEC without a budget of his own can determine what schools get what facilities, and effectively manage the facilities. Apparently he will have power to encourage a process of redistribution of teachers and material supplies within the NEC. He is a personnel director to this extent, although it is interesting that little financial decentralization appears to be in prospect with nuclearization. Budgeting functions are being decentralized to the Zone level, with later possibilities of an increasing control of budgeting at the NEC level. Local fund-raising is apparently not thought to be a prime function of the nuclearization process. More important is the integration of the communities to secure their co-operation for a new system, with more local financing a possible later consequence of successful implementation. Often building costs of new schools can be financed in part from local resources, more so in the rural areas than in urban ones, but at times local initiative for new building has exceeded the capacity to pay for the operating expenditures of such new schools. Rural NEC's would hopefully rationalize this planning.

The Law and Regulations on Nuclearization do not spell out how the various non-school facilities are to be integrated at the local level other than by the co-ordination efforts of the Director. Completed NEC maps show, for instance, in the inventory of local means of 'communication', the inclusion of all schools at the Basic level (state, state-supported and private), colleges (Colegios), intermediate, and secondary schools, and also cinemas, radio and TV stations, libraries, museums, sports' facilities, churches, health centres, agricultural services facilities, factories, and co-operatives. The kinds of use and extent of use of such facilities at the local level and the means of payment for material and human resources to be supplied by the larger community, is not yet worked out. Perhaps elements of volunteerism, paid contracts, redistribution of state-paid personnel and of state-owned buildings would all be involved in the long run. For this, much school mapping or micro-planning at the local level will be necessary. Indeed, the mobilization of new effort and new participation in schools under the nuclearization system will depend upon how these resources can be attracted, contracted or purchased, or commandeered for their new roles.

Considering the question more generally of mobilization of resources for the improvement of education and for the continued expansion of the educational system, we must now turn in the next chapter to a review of the performance of the national economy. We shall also take a look at the key provisions of the 1971-75 Plan. In Chapter V, we will make our own projections for the period to 1980. Although the view is one of the overall performance of the economy, our primary purpose will be to assess the development potential for the generation of resources which will be essential to carry out the goals for further educational expansion and reform.

IV. The economic performance of the sixties

A. INTRODUCTION

The purpose of the economic section of this analysis is to examine the major features of the Peruvian growth experience of the 1960's. By looking at a period of some years' duration, by noting the most important ingredients of the rather remarkable recent economic performance, and by noting as well some of the major problems that have long persisted, we are in a position to examine the way in which resources for public purposes can grow. Our main interest, of course, is the potential for the finance of education. Education and other largely social goods can be provided to meet growing social requirements and growing public demands largely as a function of general economic development. To be sure, increased productivity and greater efficiency in the use of given public resources, just as in the use of private capital resources, is an important mark of development itself. Educational growth and development is much more than a mere by-product of economic development. And clearly a vast number of factors that are independent of the volume of resources the education sector is consuming control the effectiveness of the teaching and learning process. But it is also the case that where the education sector is growing at very high rates, as in the case of Peru in the past decade, the ability to increase real resources - the amounts spent for salaries, equipment, and building and other capital costs - is an important determinant of what can be accomplished. Thus we must examine the economic context of the very instructive recent past, and consider how it might reasonably be projected a decade ahead. This method may produce some insights into those economic factors which, along with many other non-economic ones, constrain future educational planning and performance.

B. A GENERAL DESCRIPTION OF ECONOMIC GROWTH IN THE SIXTIES

This section describes the performance of the Peruvian economy during the past decade, partly to explore its revealed capabilities and partly to form the basis for economic projections which are made in the next chapter.

Over the past 20 years Peru has experienced a substantial growth rate. Whereas South America, on the whole, had a real growth rate of just over 4 per cent per annum, Peru has been running closer to 6 per cent; during much of that period (especially from the mid-fifties to the late sixties), the rate has been half again as high. Year by year growth rates show sustained periods in excess of 6 per cent, offset by others of slower or zero growth; but throughout the sixties (see Table 65) real Gross Domestic Product grew by more than 60 per cent which is probably the largest in South America. As Tables 65 and 66 indicate, this generally strong overall performance has produced somewhat more moderate results in per capita terms since Peru also has a very high rate of population growth. Its population growth rates run somewhat in excess of the South American continent's rather high average, and is second only to Venezuela on the continent. But in spite of a population growth rate of 3.1 per cent, per capital income growth exceeds the continental average and is perhaps surpassed only by Bolivia.[1]

Per capita income, at present only below US$500, places the country roughly in the bottom of the top third among lists of the 75-100 largest developing countries. One study of 63 countries of GNP per capita in constant 1966 dollars ranked Peru 29th in 1960 and 25th in 1967.[2] It is interesting, however, to know that recent experimental indices of 'real' private consumption per head in 1960, such as those of Wilfred Beckerman, place Peru considerably lower, 43rd out of 57. This result can be partly explained not only by possible differences in rates of capital formation but also undoubtedly by the effects of income distribution.[3] Using data on a 1960 survey of 54 countries' industrial structure, Chenery and Taylor found that Peru closely fit the central tendencies of the small country group, oriented toward industry rather than toward primary production, with the agricultural share down well below one-third of national product and the industrial share approaching one-quarter. The pattern exhibited in 1960, cross-sectional data probably continued through the decade. In short Peru is a rather diversified, industry-oriented, member of the small country group substantially dependent upon foreign trade following a pattern not

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[1] OECD Development Centre, National accounts of less-developed countries, 1959-68, Paris, June 1970.

[2] AID, 'Gross national product, growth rates and trend data', July 1968, quoted in Meier, G.M., Leading issues in economic development, Oxford, 1970.

[3] Beckerman, W., also quoted in Meier, G.M., ibid., uses such explanatory variables as steel consumption, cement production, volume of mail, stocks of telephones, radios, road vehicles, meat consumption and other 'real' variables.

Table 65. Growth rates of key aggregate variables annual rate of change with respect to previous year

						5 years[1]						5 years[1]	10 years[1]		
	1961	1962	1963	1964	1965	1961-65	1966	1967	1968	1969	1970	1966-70	1961-70	1971	1972
GDP at 1963 prices	8.2	8.8	3.9	6.8	4.9	6.5	5.7	4.6	1.4	1.7	7.0	4.1	5.3	5.9[2]	4.8[2]
GDP at current prices	12.3	14.8	9.8	20.1	18.8	15.2	19.0	14.7	18.4	10.5	14.7	15.5	15.4	12.6[3]	12.6[2]
Population	2.9	3.0	3.0	2.7	3.4	3.0	3.0	3.2	3.1	3.1	3.1	3.1	3.1	3.1[3]	3.1[2]
GDP per capita	5.4	5.8	0.6	3.5	1.0	3.3	3.2	-1.0	-2.5	-0.6	3.8	0.6	2.0	2.7[3]	1.6[2]
Cost of living index	5.9	6.6	6.0	9.9	16.4	9.0	8.9	9.7	19.1	6.2	5.1	9.8	9.4	6.7[4]	7.3[2]

1. Average rates are simple averages of yearly rates.
2. Instituto Nacional de Planificación, Peru, Plan Bienal para 1973-1974, Proyecto, Chapter III, Table 2, Lima, April 1973.
3. IIEP estimates.
4. IIEP estimate, see Appendix I. Table VII.

Source: Central Reserve Bank of Peru, 1970-1972 per capita estimates based on IIEP population estimates.

Table 66. Growth of income, population, and income per capita, Peru and South America, Indices 1960 = 100

	1959	1968
Growth of real product		
Peru	91.6	154.4
South America	93.1	139.5
Growth of population		
Peru	97.2	127.4
South America	97.3	124.7
Growth of income per capita		
Peru	94.3	121.7
South America	95.7	118.3

Source: National accounts of less-developed countries 1959-68, Development Centre, OECD, Paris, June 1970.

Table 67. Growth indexes of Gross Domestic Product (1960-70)

	1960	1965	1970
Index of :			
GDP at current prices	100.0	201.9	413.9
GDP at constant prices	100.0	136.2	162.6
Total population ('000)	10 125.4	11 750.4	13 684.1
GDP/capita in Soles	14 290.7	16 772.7	17 214.0
GDP/capita in US$[1]	369.2	433.3	444.8
Index of :			
GDP/capita	100.0	117.1	120.5

Indices 1960=100

[1] At a rate of exchange : S/.38.70 = US$1.

Source: Central Reserve Bank of Peru; 1970 per capita estimates based on IIEP population estimate.

uncommon to many that are at its stage or have passed through its present stage of production. These features include problems of regional disparity and an urban-rural dualism, a high rate of internal migration, the pressure for more employment opportunity in urban areas and also pressure in the outlying regions to offset the inter-regional imbalance of opportunity. There is a high foreign trade and external capital dependence, a high rate of inflation either present or incipient, and inadequate domestic agricultural production to balance the more rapid industrial growth. Table 68 shows, for example, the regional disparity in income per capita in 1961 for 23 different

Table 68. Income per capita by department as a percentage of national income per capita

Regions	Average % of per capita national income	% of national income		% of population	
1. Lima-Callao	191.5		42.5		22.2
2. Tacna	185.2		(1.2		(0.7
3. Moquegua	139.8		(0.7		(0.5
4. Ica	121.5	10.7	(3.0	9.0	(2.5
5. Arequipa	110.6		(4.3		(3.9
6. Pasco	106.6		(1.5		(1.4
7. Tumbes	94.3				
8. Junin	88.3				
9. Lambayeque	88.0				
10. Madre de Dios	83.6				
11. Piura	82.7				
12. La Libertad	81.4				
13. Ancash	73.9				
14. Cuzco	72.2				
15. Puno	62.6				
16. Amazonas	58.4				
17. Loreto	57.6				
18. Cajamarca	55.8				
19. Huancavelica	55.3		(1.7		(3.0
20. Apurimac	51.9		(1.5		(2.9
21. Huanuco	50.2	7.8	(1.7	15.0	(3.4
22. Ayachuco	49.8		(2.1		(4.1
23. San Martin	45.9		(0.8		(1.6
TOTAL NATIONAL INCOME	100.0		100.0		100.0

Source: Banco Central de Reserva del Perú, Cuentas Nacionales del Perú 1960-69, Vol. 1, Lima, 1970.

departments or provinces throughout the country. The Lima area, with 22.2 per cent of the population, had 42.5 per cent of the estimated national income; these figures show the strong relative role of the urban area in the economy. The next highest five departments, although much less urban in character, contrast strongly with the five lowest per capita departments. One would expect to find comparable disparity of production of output within regions as well.[1]

Although the overall growth rate was strong, Table 65 also shows the growth experience in the decade to have broken into two distinct phases. During the first phase, from 1960 to 1967, there was a strong but nonetheless steadily diminishing series of real growth rates and growing inflationary pressure fuelled by increasing excess demand. Spending was fed in turn by a substantial resort to deficit financing of the central budget. After some delays, which put steadily increasing additional pressure on the internal price structure relative to world prices, a currency devaluation was required in 1967.

In the second period, from 1967 to 1970, the growth rate slowed; indeed during 1968-69 it failed to match population growth. The result was a much lower average performance in the second period even with the strong resumption of real growth in 1970. This was a period of corrective and balancing measures in internal monetary and fiscal policy and in external monetary relationships in order to restore fiscal and structural equilibrium to the economy. Toward the end of this period, a number of initiatives were adopted by the government to bring basic structural changes - notably new emphasis on public finance of capital formation and upon centrally sponsored public programmes for wider transmission of growth throughout the economy.

In the period 1971-72 early evidence suggests that real growth of GDP continued but at rates closer to about 5 per cent a year than the 7 per cent of the 'turn around' year, 1970. These rates have been about equal to the average for the past decade. Although authorities might hope that another pattern of high growth is being set, there is as yet no evidence of growth at nearly record rates such as those of the years in the early 1960's, nor, as we shall see, at the ambitious rates contemplated in the 1971-75 Economic Plan.

It is important to underscore the dependence of the Peruvian economy and its year-to-year performance upon the trade sector and export earnings. This dependence is clearly seen in Table 69, where exports and Gross Domestic Product are compared. The series displayed there, though not strictly comparable, are strongly indicative

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1. As noted above, highly-skewed income distribution is a significant feature and long noted concern of Peruvian observers of economic performance. See, for instance, sources cited in Paulston, Roland G., Society, schools and progress in Peru, Pergamon, Oxford, 1971, pp. 91-92. He himself describes distribution as extreme and more unequal than any other country for which comparative data are available.

Table 69. Year-to-year growth rates of exports and Gross Domestic Product

Year	Exports[1]	G.D.P.[2]
	%	%
1961	14.9	8.2
1962	8.8	8.8
1963	0	3.9
1964	23.2	6.8
1965	0	4.9
1961-65[3]	9.4	6.5
1966	15.2	5.7
1967	-5.8	4.6
1968	13.1	1.4
1969	5.0	1.7
1970	17.1	7.0
1966-70[3]	8.9	4.1
1961-70[3]	9.2	5.3

1. Exports are valued in dollars of current value.
2. GDP at 1963 prices.
3. Simple average of yearly growth rates.

Source: Data are from Central Reserve Bank of Peru.

of income multiplier effects transmitted from the foreign sector to the domestic economy sector. If the currency devaluation of 1967 which explains the exceptional years 1968-69 is borne in mind, the linkage is apparent. Some observers would describe the Peruvian economy as a classic case of export-led growth, with this - one where the export sector, rather than investment itself, is the main force for growth. When the export sector is strong, availability of imports allows greater price stability, since domestic shortages are easily filled.[1] If the value of exports in turn affects foreign and domestic investment, there is added an 'accelerator' reinforcement of trade-led effects. An important question is the extent to which the export sector has significant linkages to domestic production and employment. As we shall see, the extent of such linkages is limited in Peru as in many developing countries. Many exports such as mineral products, fisheries products, and sugar are produced with relatively capital intensive methods.

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[1] Thorbecke, E. and Stoutjesdijk, E., Employment and output, a methodology applied to Peru and Guatemala, OECD Development Centre, Paris, 1971 (for an explanation of Peruvian growth along these lines including several further references).

C. DEVELOPMENT BY MAJOR INDUSTRIAL SECTORS

Table I, Appendix I, contains a full portrayal of expenditure and sectoral origins of national product over the decade. In Table 70 these data are converted to constant 1963 prices and the sectoral proportions are shown. Notable changes include a marked decline in the agricultural share and a corresponding rise in the industrial share. Sectoral growth rates, as shown in Table 71, also reveal these changes. The fishing sector, which represents one of the strong export earners, developed in the last 20 years, grew more powerfully in the first half of the decade than recently, and is believed to be reaching limits imposed by ecological conditions. Mining has grown less rapidly than G. D. P. Its future growth rates depend upon present and prospective investments in new copper production. Housing has grown at a constant 3 per cent rate, about equal to population growth; given the heavy urban migration, there seems to be a possibility of a growing deficit in urban living space. The services sector (included in 'other') and provision of public utilities have been relatively fast growing. The most significant shift is the relative decline of agriculture, which deserves more comment.

Agricultural development has been a continuing concern of Peruvian authorities and of numerous consultative missions to Peru since World War II. A FAO-IBRD[1] mission organized at the request of the Peruvian Government in the late 1950's advised that unless vigorous action were taken, agriculture could become a stumbling block preventing general growth. The balance of payments was seen as increasingly burdened by the import of grains and meat, and a target of 3 per cent growth was seen as minimal for the sector. As we have noted, actual growth performance during the period was little more than half that rate, only 1. 6 per cent per annum for the decade. Agriculture grew twice as fast in the first half of the decade as in the second, and in some years output stagnated or fell. In the period from 1969-71 there was some resumption of more significant growth in agriculture, but by 1972, indications are that output had levelled out again. No strong trend of growth has yet been established: indeed, overall agricultural growth has been insufficient to match population growth. For instance, in 1960 agricultural output per capita was S/. 1 322 at constant 1963

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[1] Food and Agricultural Organization - International Bank for Reconstruction and Development.

Table 70. Sectoral origins of Gross Domestic Product (S/. '000,000 at 1963 prices)

Sectors	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969[1]	1970[2]
Agriculture and forestry	13 194	13 951	14 662	14 279	14 950	14 879	15 093	15 193	14 822	15 193	15 573
Fishing	1 041	1 356	1 599	1 510	1 838	1 513	1 783	2 048	2 128	1 788	1 880
Mining	5 689	6 017	5 695	6 197	6 364	6 606	6 563	7 015	7 486	7 690	8 036
Manufacturing	10 899	11 976	13 223	14 173	15 434	16 724	18 368	19 417	20 409	20 806	22 844
Construction	2 671	3 280	3 579	3 091	3 419	3 864	4 207	4 423	3 684	3 558	4 465
Commerce	11 551	12 669	13 844	14 331	15 320	16 868	18 415	18 444	18 143	17 742	19 161
Electricity, gas and water	472	586	611	649	694	824	880	970	1 015	1 055	1 123
Housing	4 297	4 424	4 560	4 701	4 847	4 997	5 152	5 312	5 481	5 655	5 853
Government Administration	6 118	6 914	7 407	7 956	8 409	8 879	9 420	9 993	10 295	10 605	10 976
Other[3]	9 650	10 030	12 354	13 591	14 638	14 950	15 334	16 785	17 505	18 565	19 932
TOTAL GDP	65 782	71 203	77 494	80 478	85 913	90 104	95 225	99 600	100 968	102 657	109 843
Percentage composition	%	%	%	%	%	%	%	%	%	%	%
Agriculture and forestry	20.4	19.6	18.9	17.7	17.4	16.5	15.8	15.3	14.7	14.8	14.2
Fishing	1.6	1.9	2.1	1.9	2.1	1.7	1.9	2.1	2.1	1.7	1.7
Mining	8.6	8.5	7.3	7.7	7.4	7.3	6.9	7.0	7.4	7.5	7.3
Manufacturing	16.6	16.8	17.1	17.6	18.0	18.6	19.3	19.5	20.2	20.3	20.8
Construction	4.1	4.6	4.6	3.8	4.0	4.3	4.4	4.4	3.6	3.5	4.1
Commerce	17.5	17.8	17.9	17.8	17.8	18.7	19.4	18.5	18.0	17.3	17.4
Electricity, gas and water	0.7	0.8	0.8	0.8	0.8	0.9	0.9	1.0	1.0	1.0	1.0
Housing	6.5	6.2	5.9	5.9	5.7	5.5	5.4	5.3	5.4	5.5	5.3
Government Administration	9.3	9.7	9.5	9.9	9.8	9.9	9.0	10.0	10.2	10.3	10.0
Other[3]	14.7	14.1	15.9	16.9	17.0	16.6	16.1	16.9	17.4	18.1	18.2
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

(1) Estimated.

(2) Preliminary.

(3) Includes transport, service and banking.

Source: Central Reserve Bank of Peru; 1970, National Institute of Planning and Dirección General Asuntos Económicos del M.E.F.

ctoral origins of Gross Domestic Product (S/. '000,000 at 1963 prices)

	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969[1]	1970[2]
nd forestry	13 194	13 951	14 662	14 279	14 950	14 879	15 093	15 193	14 822	15 193	15 573
	1 041	1 356	1 599	1 510	1 838	1 513	1 783	2 048	2 128	1 788	1 880
	5 689	6 017	5 695	6 197	6 364	6 606	6 563	7 015	7 486	7 690	8 036
g	10 899	11 976	13 223	14 173	15 434	16 724	18 368	19 417	20 409	20 806	22 844
	2 671	3 280	3 579	3 091	3 419	3 864	4 207	4 423	3 684	3 558	4 465
	11 551	12 669	13 844	14 331	15 320	16 868	18 415	18 444	18 143	17 742	19 161
gas and water	472	586	611	649	694	824	880	970	1 015	1 055	1 123
	4 297	4 424	4 560	4 701	4 847	4 997	5 152	5 312	5 481	5 655	5 853
Administration	6 118	6 914	7 407	7 956	8 409	8 879	9 420	9 093	10 295	10 605	10 976
	9 650	10 030	12 354	13 591	14 638	14 950	15 334	16 785	17 505	18 565	19 932
P	65 782	71 203	77 494	80 478	85 913	90 104	95 225	99 600	100 968	102 657	109 843
omposition	%	%	%	%	%	%	%	%	%	%	%
nd forestry	20.4	19.6	18.9	17.7	17.4	16.5	15.8	15.3	14.7	14.8	14.2
	1.6	1.9	2.1	1.9	2.1	1.7	1.9	2.1	2.1	1.7	1.7
	8.6	8.5	7.3	7.7	7.4	7.3	6.9	7.0	7.4	7.5	7.3
	16.6	16.8	17.1	17.6	18.0	18.6	19.3	19.5	20.2	20.3	20.8
	4.1	4.6	4.6	3.8	4.0	4.3	4.4	4.4	3.6	3.5	4.1
	17.5	17.8	17.9	17.8	17.8	18.7	19.4	18.5	18.0	17.3	17.4
as and water	0.7	0.8	0.8	0.8	0.8	0.9	0.9	1.0	1.0	1.0	1.0
	6.5	6.2	5.9	5.9	5.7	5.5	5.4	5.3	5.4	5.5	5.3
dministration	9.3	9.7	9.5	9.9	9.8	9.9	9.0	10.0	10.2	10.3	10.0
	14.7	14.1	15.9	16.9	17.0	16.6	16.1	16.9	17.4	18.1	18.2
	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

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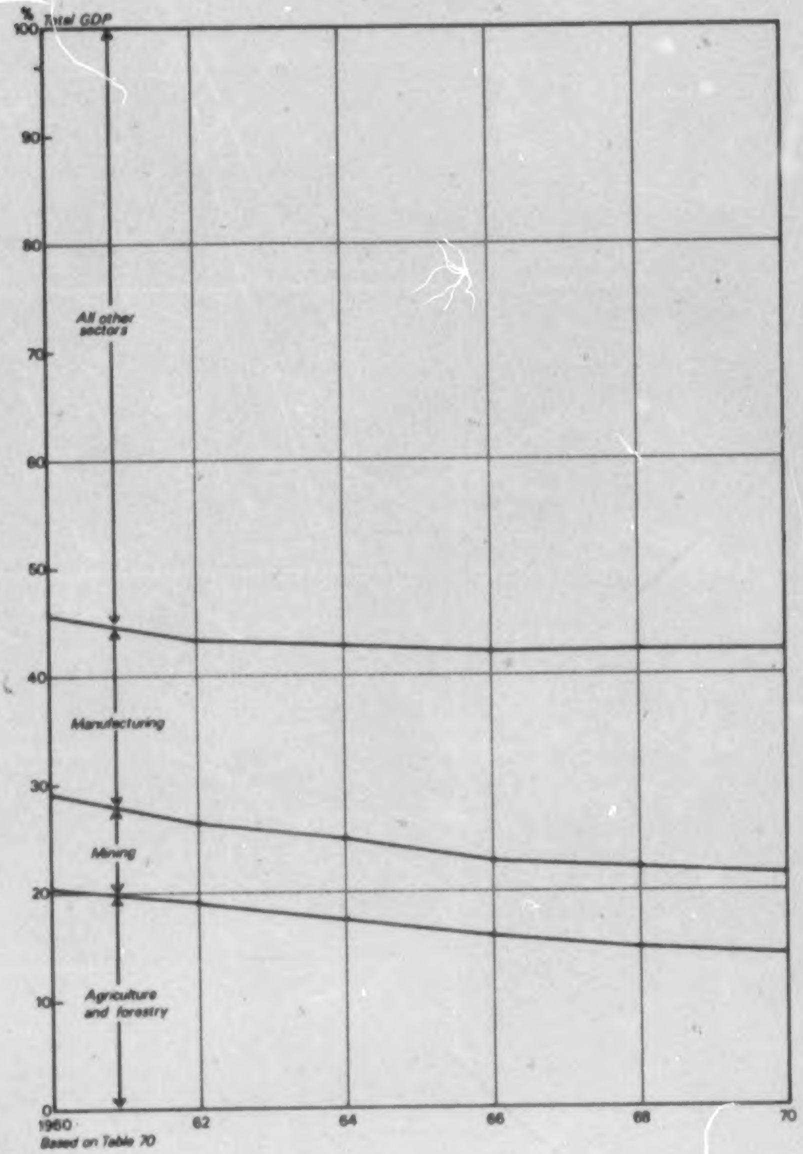
ransport, service and banking.

tral Reserve Bank of Peru; 1970, National Institute of Planning and Dirección General Asuntos Económicos del M.E.F.



Based on Table 70

Chart 10. Proportional distribution of sectoral GDP

Table 71. Growth rates of real Gross Domestic Product by sector - annual rates of change with respect to previous year

						5 years[1]						5 years[1]	10 years[1]		
	1961	1962	1963	1964	1965	1961-65	1966	1967	1968	1969	1970	1966-70	1961-70	1971[2]	1972[2]
Ag. and forestry	4.2	5.1	-2.6	4.7	-0.5	2.2	1.4	0.7	-2.4	2.5	2.5	0.9	1.6	2.2	0.3
Fishing	30.3	17.9	-5.6	21.7	-17.7	9.3	17.8	14.9	3.9	-16.0	5.1	5.1	7.2	-13.1	-47.0
Mining	5.8	5.7	-5.4	2.7	3.8	2.5	-0.7	6.9	6.7	2.7	4.5	4.0	3.3	-2.4	4.0
Manufacturing	9.9	10.4	7.2	8.9	8.4	9.0	9.8	5.7	5.1	1.9	9.8	6.5	7.8	9.0	4.1
Construction	22.8	9.1	-13.6	10.6	13.0	8.4	8.9	5.1	-16.7	-3.4	25.5	3.9	6.2	18.3	17.5
Commerce	9.7	9.3	3.5	6.9	10.1	7.9	9.2	0.2	-1.6	-2.2	8.0	2.7	5.3	8.5	7.6
Elect., gas and water	24.2	4.3	6.2	6.9	18.7	12.1	6.8	10.2	4.6	3.9	6.4	6.4	9.3	8.9	9.5
Housing	3.0	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.2	3.2	3.5	3.2	3.2	4.4	4.6
Govt. administration	13.0	7.1	7.4	5.7	5.6	7.8	6.1	6.1	3.0	3.0	3.5	4.3	6.1	4.8	7.5
Other	3.9	23.2	10.0	7.7	2.1	9.4	2.6	9.5	4.3	6.1	7.4	6.0	7.7	6.7	7.4
GDP at 1963 prices	8.2	8.8	3.9	6.8	4.9	6.5	5.7	4.6	1.4	1.7	7.0	4.1	5.3	5.9	4.8
GDP at current prices	12.3	14.8	9.8	20.1	18.8	15.2	19.0	14.7	18.4	10.5	14.7	15.5	15.4		
Population	2.9	3.0	3.0	2.7	3.4	3.0	3.0	3.2	3.1	3.1	3.1	3.1	3.1		
GDP per capita	5.4	5.8	0.6	3.5	1.0	3.3	3.2	-1.0	-2.5	0.6	3.8	0.6	2.0		
Cost of living index	5.9	6.6	6.0	9.9	16.4	9.0	8.9	9.7	19.1	6.2	5.1	9.8	9.4		

1. Five-year and ten-year data are simple averages of annual growth rates for the period indicated.

2. Instituto Nacional de Planificación, Peru, Plan Bienal para 1973-74, Proyecto, Chapter III, Table 2, Lima, April 1973. These data are preliminary.

Source: Data of Table 70.

. Growth rates of real Gross Domestic Product by sector - annual rates of change with respect to previous year

						5 years[1]						5 years[1]	10 years[1]		
	1961	1962	1963	1964	1965	1961-65	1966	1967	1968	1969	1970	1966-70	1961-70	1971[2]	1972[2]
	4.2	5.1	-2.0	4.7	-0.5	2.2	1.4	0.7	-2.4	2.5	2.5	0.9	1.6	2.2	0.3
	30.3	17.9	-5.6	21.7	-17.7	9.3	17.8	14.9	3.9	-16.0	5.1	5.1	7.2	-13.1	-47.0
	5.8	5.7	-5.4	2.7	3.8	2.5	-0.7	6.9	6.7	2.7	4.5	4.0	3.3	-2.4	4.0
uring	9.9	10.4	7.2	8.9	8.4	9.0	9.8	5.7	5.1	1.9	9.8	6.5	7.8	9.0	4.1
tion	22.8	9.1	-13.6	10.6	13.0	8.4	8.9	5.1	-16.7	-3.4	25.5	3.9	6.2	18.3	17.5
ce	9.7	9.3	3.5	6.9	10.1	7.9	9.2	0.2	-1.6	-2.2	8.0	2.7	5.3	8.5	7.6
as	24.2	4.3	6.2	6.9	18.7	12.1	6.8	10.2	4.6	3.9	6.4	6.4	9.3	8.9	9.5
	3.0	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.2	3.2	3.5	3.2	3.2	4.4	4.6
mi- n	13.0	7.1	7.4	5.7	5.6	7.8	6.1	6.1	3.0	3.0	3.5	4.3	6.1	4.8	7.5
	3.9	23.2	10.0	7.7	2.1	9.4	2.6	9.5	4.3	6.1	7.4	6.0	7.7	6.7	7.4
963 prices	8.2	8.8	3.9	6.8	4.9	6.5	5.7	4.6	1.4	1.7	7.0	4.1	5.3	5.9	4.8
urrent	12.3	14.8	9.8	20.1	18.8	15.2	19.0	14.7	18.4	10.5	14.7	15.5	15.4		
on	2.9	3.0	3.0	2.7	3.4	3.0	3.0	3.2	3.1	3.1	3.1	3.1	3.1		
capita	5.4	5.8	0.6	3.5	1.0	3.3	3.2	-1.0	-2.5	0.6	3.8	0.6	2.0		
iving	5.9	6.6	6.0	9.9	16.4	9.0	8.9	9.7	19.1	6.2	5.1	9.8	9.4		

-year and ten-year data are simple averages of annual growth rates for the period indicated.

tuto Nacional de Planificación, Peru, Plan Bienal para 1973-74, Proyecto, Chapter III, Table 2, Lima, April 1973.

e data are preliminary.

Data of Table 70.

Table 72. Principal products of commercialized agriculture

Products	Volume of production in metric tons ('000) 1960	1965	1970	Value 1970 (S/. '000, 000)	1972[1]	Volume growth rates 1960-70
						%
Potatoes	1 398	1 568	1 929	4 348	1 711	3.3
Rice	358	291	587	2 884	436	5.1
Alfalfa	4 674	6 240	6 142	2 835	-	2.8
Cotton	362	357	248	2 615	231	-3.8
Maize	442	585	668	2 014	588	4.2
Sugar cane	7 701	7 772	8 070	1 565	8 700	0.4
Coffee	33	54	65	1 198	66	7.1
Plantains	351	582	811	1 014	-	9.2
Beans	37	45	67	516	49	6.2
Wheat	146	158	125	513	139	-1.5
Barley	180	178	169	418	-	-0.5

1. Preliminary data from Instituto Nacional de Planificación, Peru, Plan Bienal para 1973-74, Proyecto, Lima, April 1973.

Table 73. Agricultural products as a percentage of total exports

Year	Percentage	Year	Percentage
1960	34.4	1970	15.4
1965	23.7		

prices, whereas by 1970 it had fallen to S/. 1 103, a drop of about 16 per cent. Few of the major products of commercialized agriculture enjoyed growth rates as high as that of G. D. P. (see Table 72). Cotton[1] and sugar cane, products in the export category, and grains such as wheat and barley, products in the consumption and import-competing category, had flat or decreasing growth rates in volume terms. Potatoes, rice, and maize, among the most important crops, did have output growth exceeding population growth. The highest rates were among some of the smaller contributors such as coffee, plantains, and beans. Commercialized agriculture outperformed the sector as a whole, if only because elsewhere in the sector key export crops lagged and products of traditional agriculture probably no more than matched population changes in the 'traditional' sector. Table 73 shows the marked fall in importance of agricultural products in exports.

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[1] In the case of cotton the reduction was partially due to a change-over in those farming areas to products with better price prospects.

An understanding of these trends and of the problems and prospects of agriculture requires that we view the sector as composed of three sub-sectors: the traditional sub-sector, producing largely for self-consumption and largely located in the Sierra and eastern regions; the domestic commercialized sub-sector, producing for regional and urban markets; and the export sub-sector. Livestock production is a very important part of the domestic commercialized sub-sector, probably two-thirds of its output.[1] About half the remainder of total production is traditional, just over a quarter makes up the domestic commercial sector, and just under a quarter is devoted to exports. There is a clear need for import substitution in foodstuffs to stave off the rise in national food deficit.

Peru has managed with less than the predicted minimal agricultural growth requirements in agriculture by exhibiting strong growth in new non-agricultural export products, such as the fishing industry, which grew so strongly during the first half decade; but the question is continually reasserted whether the agriculture sector must not be given special priority to avoid growing dependence on food imports. Broadly based economic growth, providing high employment growth to match it, will almost certainly depend upon development of the commercial agricultural sector.

The manufacturing sector taken as a whole was the most rapidly developing major sector, averaging over 7 per cent for the decade. Its performance reflected the same two phases described above for G. D. P. - unusually strong (over 9 per cent) growth in 1960-66 and a slackening afterward, with strong resurgence in 1970.[2] Even in the last half decade growth was half again as fast as total economic activity, but as Table 74 indicates, performance varied greatly among the industries classified by principal product. Basic metals, chemical products, and engineering products such as transport equipment showed high growth rates. But the fishmeal industry, forwardly linked to the expansion of Peruvian fisheries, slackened off after previous strong growth, and consumer goods such as textiles, footwear, and clothing showed no growth trend. The significant foodstuff industry and beverages grew at about the growth rate of G. D. P.

The mining sector, closely tied to international trade and representing substantial foreign investment, grew at about 3 per cent, substantially less than G. D. P. The share of large-scale mining increased, while medium- and small-scale units became less important. The principal mining products - copper, silver, lead, zinc, and iron grew

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1. Thorbecke, E. and Stoutgesdijk, E., op. cit., pp. 22-25.
2. Since the manufacturing sector is only marginally export-oriented and relatively important in GNP for an economy the size of Peru's, it may be a force somewhat more powerful in explaining total G. D. P. than models, mentioned above, that characterize the economy as largely export-led.

Table 74. Principal products of industry ('000 000 value in Soles 1970)

Products	1965	1966	1967	1968	1969	Annual growth rate 1965-70 %
Foodstuffs	16 519	17 337	16 705	21 613	20 729	5.8
Textiles	10 029	8 791	8 382	10 887	9 485	-1.3
Basic metals	6 589	6 779	6 605	9 089	9 321	9.1
Fishmeal	9 012	9 460	9 115	9 044	8 580	-1.2
Chemical products	5 936	6 958	7 310	8 528	8 090	8.1
Petro. & derivatives	6 012	4 644	4 079	6 982	6 688	2.7
Beverages	4 550	4 799	5 008	5 879	5 587	5.3
Trans. equipment	3 003	4 147	4 305	3 887	4 890	13.0
Non-metallic mineral	2 943	3 196	3 158	3 357	3 129	1.6
Footwear & clothing	2 962	2 856	2 551	2 989	2 840	1.0

Source: Data from Ministry of Industry and Commerce, converted to 1970 values at IIEP using G. D. P. deflator.

sufficiently over the decade and enjoyed sufficiently favourable world price trends that the share of this sector in total exports actually increased, but trends in scale of output and technological change limited the extent to which increases in product were matched by increases in employment. It is estimated, for instance, that the sector accounts for about 8 per cent of G. D. P. while employing only about 2 per cent of the active labour force.

The mining sector is an important one for the future of economic development, since it must provide a major share of the export earnings required to sustain present large and growing import needs. No new large copper mining ventures were opened after 1961. Since known mineral reserves, and those areas not yet fully prospected but with good probability of ores, together substantially exceed present areas of production, this sector should continue to enjoy a strong comparative advantage. But this growth will occur only if it can be adequately financed and organized.

D. SUPPLY AND USE OF RESOURCES

Table 75 (and reference to Table I, Appendix I) and Chart 11 indicate the overall trends in supply and use of resources. Net foreign factor payments, which account for the different between domestic

Table 75. Resource availabilities and uses (current S/. '000,000)

Sectors	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970
Gross national product	55.5	62.3	71.7	78.7	95.0	113.0	134.0	152.8	181.2	200.2	232.0
Plus net foreign factor payments	1.4	1.6	1.7	1.8	1.7	1.9	2.8	4.1	4.5	5.0	3.6
Gross domestic product	56.9	63.9	73.4	80.5	96.7	114.9	136.8	156.8	185.8	205.2	235.6
Imports less exports	-1.4	-0.7	-0.3	-0.7	-1.9	1.6	2.2	4.4	-2.9	-6.1	-10.1
Imports[1]	12.0	14.6	16.3	17.6	18.6	22.3	26.6	31.8	35.4	35.4	38.5
Less exports[2]	13.5	15.3	16.7	16.8	20.6	20.7	24.3	27.5	38.4	41.6	48.6
Resource availabilities	55.4	63.1	73.0	81.2	94.8	116.5	139.0	161.2	182.8	199.2	225.4
Consumption	43.2	48.9	56.3	64.8	76.7	95.1	111.5	130.2	157.0	171.7	198.3
Private	38.4	43.0	49.5	57.1.	66.4	82.6	96.7	113.5	137.7	152.2	174.8
Government	4.8	5.9	6.8	7.7	10.2	12.5	14.8	16.7	19.4	19.5	23.5
Investment	12.3	14.2	16.7	16.4	18.1	21.4	27.5	31.0	25.8	27.5	27.2
Gross fixed	9.5	12.3	15.1	15.1	15.4	19.2	22.6	23.4	24.1	26.2	27.9
Change in stocks	2.8	1.9	1.6	1.3	2.7	2.2	4.9	7.6	1.7	1.3	-0.7
Percentage composition	%	%	%	%	%	%	%	%	%	%	%
Gross national product	97.6	97.5	97.7	97.8	98.2	98.3	98.0	98.0	97.6	97.6	98.5
Plus net foreign factor payments	2.4	2.5	2.3	2.2	1.8	1.7	2.0	2.6	2.4	2.4	1.5
Gross domestic product	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Imports less exports[1]	-2.5	-1.2	-0.5	0.9	-2.0	1.4	1.6	2.9	-1.6	-2.9	-4.3
Imports[2]	21.1	22.8	22.3	21.9	19.3	19.4	19.4	20.4	19.1	17.3	16.3
Less exports[3]	23.6	24.0	22.8	21.0	21.3	18.0	17.8	17.5	20.7	20.2	20.6
Resource availabilities	97.5	99.8	99.5	100.9	98.0	101.4	101.6	102.9	98.4	97.1	95.7
Consumption	75.9	76.6	76.8	80.5	79.3	82.8	81.5	83.1	84.5	83.7	84.2
Private	67.5	67.3	67.5	70.9	68.7	71.9	70.7	72.4	74.1	74.2	74.2
Government	8.4	9.3	9.3	9.6	10.6	10.9	10.8	10.7	10.4	9.5	10.1
Investment	21.6	22.2	22.7	20.4	18.7	18.6	20.1	19.8	13.9	13.4	11.5
Gross fixed	16.8	19.2	20.5	18.8	15.9	16.7	16.5	14.9	13.0	12.8	11.8
Change in stocks	4.8	3.0	2.2	1.6	2.8	1.9	3.6	4.9	0.9	0.6	-0.3

1. Net of all factor payments. 2. Imports of goods and services less net factor outpayments i.e. less (factor receipts minus factor payments).
3. Exports of goods and services (include factor services receipts).
Source: Data from Central Reserve Bank of Peru; totals may not add because of rounding.

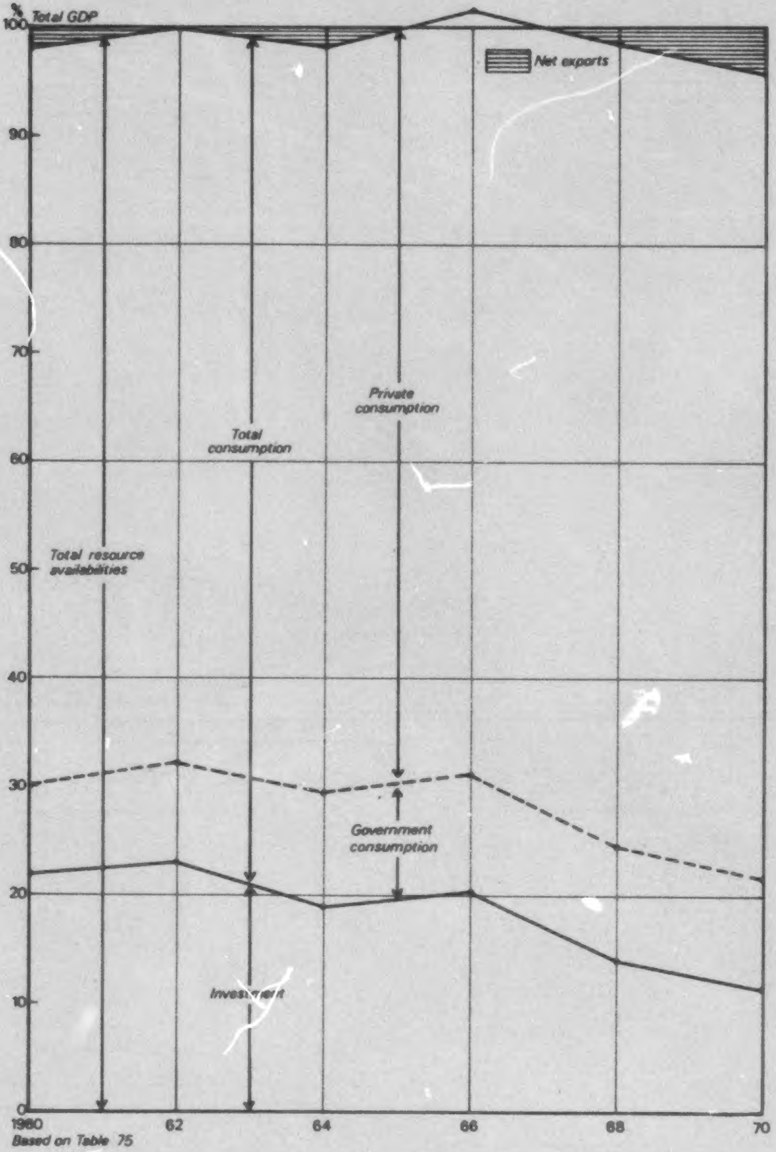

Chart 11. Proportional distribution of uses of GDP

(or geographic) product and national product were in general a constant proportion of G. D. P. of just over 2 per cent. In the period as a whole, an import gap of goods and services (imports minus exports) was not an important addition to resource availabilities. There was a striking rise in proportion of consumption, both private and government, and a matching fall in proportions of Gross Fixed Investment. These trends are examined in greater detail in the sections which follow.

E. CAPITAL FORMATION

The formation of new capital, always important as a factor of production and agent of technological change, is a critical ingredient of the development process. As can be noted in the national accounts (see Table I, Appendix I) and as we can see in Table 75, there is some evidence of a decline in average (and probably incremental) capital-output ratios during the sixties. We can also see the significant drop in the ratio of Gross Fixed Capital formation to G. D. P. from about one-fifth to one-eighth during this period (also shown in Table 76, line 4). Shifts in the aggregate ratios of investment to income over limited periods of time require cautious interpretation. In Peru during this period, they may be partially explained by a relative shift of output toward manufacturing and away from the most capital-intensive industries such as mining, by pecularities of timing of the full utilization of capacity, and by the long gestation period of investment in some industries (again such as mining) and infrastructural projects.

The trends in capital formation by agent are shown in Table 76 and Chart 12 in proportional terms.[1] Most apparent is the growth of capital formation within the public administration sector relative to that of private and public sector enterprises. Recent trends here reflect deliberate government policy to engage in new areas which we will examine below. Plant and equipment spending took a larger share relative to new construction in the early years of the decade. The construction industry is cyclical here as elsewhere. But there is some evidence that plant and equipment spending took a relatively large share through finance by reinvestment of strong corporate earnings, reaching a peak before the crisis period of 1967 . Lately there is greater emphasis on construction.

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[1] Preliminary national accounts data for 1970 available to the IIEP at the time of this writing show discontinuously large capital consumption allowances for that year. For that reason, percentage composition of savings and investment do not appear typical, and below in the projections section of this analysis, we use normalized estimates as a base for our projections in the seventies.

Table 76. Gross capital formation proportions by agent

	1960	1961	1965	1966	1969	1970
	%	%	%	%	%	%
1. Net capital formation	73.3	74.9	70.2	71.5	46.2	13.2
2. Plus capital consumption allowance	26.7	25.1	29.8	28.5	53.8	86.8
3. Gross capital formation	100.0	100.0	100.0	100.0	100.0	100.0
(a) Gross fixed capital formation (private and public sectors)	77.6	86.4	89.9	82.0	93.3	102.5
(i) Enterprises	72.3	77.8	75.6	66.7	80.5	81.4
(ii) Administration	5.3	8.6	14.3	15.3	12.8	21.1
or						
(i) Plant and equip.	43.0	48.7	48.6	48.2	52.4	49.3
(ii) New construction	34.6	37.7	41.3	33.8	40.9	53.2
(b) Net change in stocks	22.4	13.6	10.1	17.9	6.7	-2.5
4. GFCF as % of G.D.P.	16.8	19.2	16.7	16.5	12.8	11.8

Source: Computed from Table I, Appendix I.

It is interesting that from evidence available on capital formation within the manufacturing sector, we get a picture similar to that described for the economy as a whole. As Table 77, prepared from U.N. data, shows (see last line), in the mid-sixties average capital output ratios for the sector fell from 20 per cent to about 12 per cent.[1] But as can be expected for a small but growing manufacturing sector, aggregate performance masks considerable differences among industry groups. Established and frequently larger industries showed a fall in capital-output ratios to output. Industries showing cyclical or lumpy investment behaviour are petroleum refining, basic metals, and metal products. And industries such as electrical machinery, paper products, and transport equipment show both high growth and high capital-output ratios at their present stage.

There are several features of the Peruvian economy that point to the strong need for high future rates of capital formation. First, there may be a need for a reversal of the recent aggregate trends just described, since capital utilization rates tend to catch up as G.D.P. grows relative to the capital stock. Second, there is a strong probable need for further development of the mineral resource industries, to take over the critical growth role for exports played in recent years by the

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1. United Nations, The growth of world industry, 1969 edition, Vol. 1, New York, 1971.

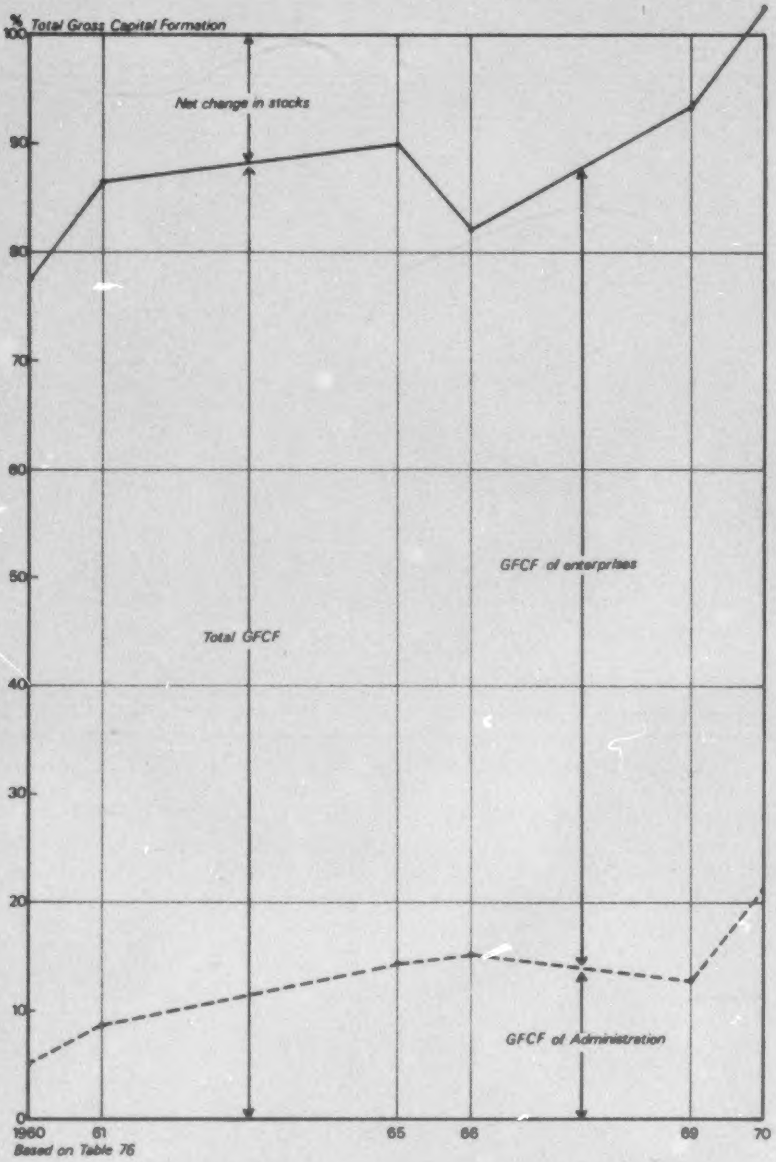

Chart 12. Proportions of Gross Capital Formation by agent

Table 77. Gross fixed capital formation at current prices and average capital output ratios (S/. '000. 000)

Branch of industry	Fixed capital formation			Value added			Average capital output ratio		
	1963	1967	1968	1963	1967	1968	1963	1967	1968
							%	%	%
Food products	1 510	1 271	1 571	4 687	7 386	10 391	32	17	15
Beverages	74	148	221	1 081	2 501	3 226	7	6	7
Textiles	377	344	480	1 844	2 723	3 946	21	13	12
Footwear and clothing	41	40	52	280	938	1 268	15	4	4
Leather and fur products	10	19	22	114	201	252	9	9	9
Wood products except furniture	92	31	90	112	322	478	82	10	19
Furniture except metal	13	20	98	151	356	669	9	6	15
Paper and paper products	37	72	127	422	777	702	9	9	18
Printing, publishing	49	74	94	456	806	1 155	11	9	8
Industrial chemicals	119	258	521	1 108	3 026	3 985	11	9	13
Petroleum refining	35	947	76	367	807	3 105	10	117	2
Rubber products	15	57	80	137	612	816	11	9	10
Non-metallic products	165	230	630	656	1 511	1 722	25	15	21
Basic metals	435	1 120	140	2 155	2 142	3 247	20	52	4
Metal products except machinery	48	63	167	412	767	1 099	12	8	15
Machinery except electrical	47	29	64	342	575	860	14	5	8
Electrical machinery	22	113	282	123	633	971	18	18	29
Transport equipment	43	100	168	708	1 332	1 470	6	8	11
Other manufacturing industries	36	116	192	226	851	1 293	16	14	15
Total manufacturing	3 168	5 082	5 095	15 798	28 862	41 572	20	18	12

Source: United Nations, The growth of world industry, 1969 edition, Vol. 1, New York 1971.

fisheries industry, and to take advantage of the recent favourable price trends which have made up for only modest real growth of mineral production. These industries are highly capital intensive. Third, the development of agriculture, particularly the commercialized sector producing marketable foodstuffs, which we have noted is important to the balance of payments, will require large capital spending. This is especially important to Peruvian agriculture where emphasis must be put on producing intermediate inputs to the sector, such as fertilizers and capital inputs for all important irrigation works. Although commercialized agriculture is relatively capital-intensive, it is also, in the view of some observers, an important sector for combining the benefits of growth in income with growth in employment, more promising in this respect than mining or manufacturing.[1] Finally, there are the needs for infrastructural capital re-emphasized in recent government programmes.

F. THE WORK FORCE

By the end of the decade the economically active population was estimated to be 4.2 million, up 1.1 million from 1960, and growing at about the 3.1 per cent rate of the population itself. Although there are many difficulties associated with the precise reckoning of the proportion of economically active persons, the figures given result from subtracting a non-active group defined as housewives, pupils and students, aged and minors, etc., and by such definition the proportion has remained fairly constant over the sixties at about 31 per cent of the population.[2] (Interestingly these estimates show a fall in the period from 1940 to 1960 due to a shift in the age structure of the population resulting from rising population growth rates, the increase in school attendance, and shifting definitions of women in the work force.) It is estimated that the urban population grew at a faster rate, nearly 4.5 per cent, because of migration; the urban work force grew at least as rapidly. The factors promoting migration are similar to those in other developing countries: the distribution of new economic activities itself weighted toward urban locations, the more abundant provision of welfare services in urban areas, advance of transport and communications, influence of education, prestige of urban occupations, and particularly, the greater promise (even if in some cases it remains only a promise) of social mobility. In short the 'hacia afuera' aspects of development patterns have meant a leading role for Lima and other coastal urban areas.

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1. Thorbecke, E. and Stoutjesdijk, E., op. cit. The authors see this sub-sector as one where income growth and employment growth are more complementary than most.
2. Data from Ministry of Labour, Comisión Horizontal de Población y Ocupación, Lima, 1970.

No complete census data are available later than the census of 1961, but a number of micro studies based on household surveys provide some more recent data on qualitative features of the work force. On the basis of partial information for nine cities, which together account for more than 50 per cent of the urban work force, its structure would appear to have changed during the decade towards higher percentages among professional and technical personnel (from 5.4 to 8.6 per cent), administrative and managerial personnel (from 2.9 to 3.8 per cent), and craftsmen and operatives (from 27.5 to 28.3 per cent). Such fragmentary evidence may suggest an upgrading of average work qualifications, but it leaves open the question of whether such trends tend to promote employment as a whole.

There are no data presently available on the educational qualifications for the active population as a whole, but the variety of outputs from the increasingly complex educational system have increased substantially and may be presumed to have added a significant qualitative factor. As we have seen, school enrolment and pass rates have increased substantially, although enrolment trends for the middle and higher levels of scientific and technical education have not been as high as in the general branches. The out-of-school vocational training system has expanded, both in numbers of institutions and enrollees. But again larger numbers have emphasized qualifications for commerce and the service sector, with fewer taking technical courses for industry or agriculture.

University enrolments and overseas study have expanded. Whereas Peru had 10 universities in 1960, there were 33 by 1970, and the student body had swelled from 31 000 to 105 000.[1] No totally reliable information is available on overseas study. But it is estimated that there are between 20 000 and 30 000 students[2] studying in Argentina, Spain, the United States, Brazil, France and other European countries. Roughly 2 500 state grants for overseas study were provided between 1967 and 1969. There is a certain amount of high-level manpower provided from abroad. In 1968, for example, 574 international consultants were provided by foreign governments and international organizations.

Immigration probably has an effect on the supply of higher level manpower. In the period 1964 to 1966 the numbers of immigrants rose to nearly 1 500 per annum but fell back to half that level in 1969. Since most permitted immigration was in the professional, technical, administrative and skilled groups, their significance in providing skills exceeds their numbers. There is no evidence on emigration but it is not thought to be significant in the balance of skills available to the economy.

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1. Consejo Nacional de la Universidad Peruana, Memoria 1969-70, Lima, 1971, p. 154.
2. This number surprisingly large is preliminary, but is borne out by Paulston, Roland, op. cit., p. 254.

Household surveys in Lima-Callao (1967-69), Arequipa (1965-69) and Inquitos (1966-69) show a rise in the educational level of the work force. In all three areas a reduction in the percentage of uneducated workers was noted. However, in Lima-Callao, unlike the other two cities, there was no apparent increase in the percentage of workers with secondary school education.

To complete an analysis of the work force, it is necessary to consider the degree of utilization of the economically active population, the questions of employment, unemployment, and underemployment. Survey data on the frequently fine and operationally difficult distinctions between these categories is not totally reliable anywhere, and is especially difficult to determine precisely in the developing countries.

Data on the known or open unemployment rate show strong increases. According to 1961 census data and estimates based on 1969 household survey data, the open unemployment rate for the nation rose from 2.6 per cent to 5.9 per cent, an increase in numbers out of work from 82 000 to almost 250 000 in 1969.[1] Such rates increased more noticeably in the non-farming sector. In the farming sector, where underemployment more easily substitutes for open unemployment, rates were not seen to change much during the period.

In relation to economic sector claimed by the worker, the highest unemployment rates were in non-farm production of goods and services throughout the period under review, but by 1969 there was a noticeable increase in unemployment in commerce and other services. These trends may partially reflect the mix of educational preparation during the sixties. It is sometimes suggested that the services sector is the residual employment pool for the urban area in the same way that the subsistence agricultural sector is the employer of last resort for the rural economy.

But unemployment data do not reflect underemployment, the poor or only part-time employment of the existing work force. If we take visible underemployment to be the number of people who work short weeks or are seasonally unemployed, and invisible underemployment to be low-level utilization, measured (for purposes of analysis) by the number of those receiving less than the minimum wage, for 1969 it is estimated that in nine Peruvian cities nearly a third (30.8 per cent) of the active population are either openly unemployed or underemployed. If this estimate were extended throughout urban Peru, the numbers of underemployed would number 730 000. In the Lima-Callao area, for example the following trends are noted from micro-surveys:

January 1967	26 per cent
November-December 1969	28 per cent
May 1970	31 per cent

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[1] Data from Ministry of Labour, Comisión Horizontal de Población y Ocupación, Lima, 1970.

even though toward the latter part of this period there was considerable expansion of the economy. In Arequipa, the percentages varied from 32 per cent in 1965 surveys to 44 per cent in 1969.[1] These data show that about 80 per cent of those classified as underemployed receive lower than normal pay; the remaining 20 per cent are classified as being on short hours. Whatever the difficulties of defining underemployment in terms of low pay (since pay may be partially a function of developed aptitudes which in some of the labour force may not be very high relative to urban employment opportunities) the seriousness of concealed unemployment is evident from the fact that almost a half of those affected in the urban area receive one-third or less of a 'normal' salary. Even from such fragmentary evidence, it is clear that the elasticity of labour supply, at least in the aggregate, is very high, and unemployment is a serious concern.

Recent estimates are not available for the rural area. The 1961 census indicates that as much as two-thirds of the rural economically active population consisted of either independent workers or unpaid family workers and persons classified as being without specific occupation. If it is assumed that half the independent workers and most of the other categories are underemployed, the total rural proportions are high, perhaps as high as one-half. Even such crude estimates give some meaning to the phenomenon of urban migration. As difficult as it is to find urban employment, the odds for fuller employment could be seen in the eyes of the migrant as better in the urban areas than in other parts of the country.

Changes in the structure of production have limited the extent to which rising Peruvian G. D. P. has been accompanied by rises in employment. As the share of agricultural output in G. D. P. has fallen from roughly 20 per cent to 15 per cent from 1960 to 1968, the share of the work force in that sector has fallen from 52 per cent to 48.4 per cent. The more rapidly growing sectors tend to have heavier capital to labour and output to labour ratios than agriculture.

Shifting relationships between output and employment raise the question of labour productivity. In the presence of considerable demonstrated unemployment and underemployment, the rise in sector output relative to labour inputs, an aggregate indicator of rising 'productivity' of labour, could be considered a mixed blessing. At best it may accompany rapid growth, improvement of cost position for international competition, and the best utilization of scarce skilled sub-categories of labour, etc. But at worst, it may reflect development pressing ahead with capital intensive technologies often basically unadapted to the mix of labour versus other factors available in the country.

Defining labour productivity as the ratio of output to economically active population by sector, some observers find that in manufacturing and the services sector, growth rates of both output itself and labour productivity rose during the period of the sixties; whereas in the government sector and in construction there was no increase in labour productivity. There was a decline in growth rates of both output and labour productivity in agriculture.[1] In short, the manufacturing sector did not grow as fast as an employer as it did in output.

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[1] Ministry of Labour, op. cit.

There was a significant increase in the decade in the proportion of the work force in commerce and services, with apparent evidence of a role played by this sector as the employer of last resort. Estimates suggest that the main increase in commerce was in the branch of retail trade. In the area of services more than half was accounted for by personal services (roughly 70 per cent of which represents domestic service). Services to enterprises accounted for only 2.5 per cent of the 1969 figure. Recently however, there have been signs of a reduction in the proportion of personal services and strong increases in public services such as health and education.

G. NATIONAL SAVINGS

In the early part of the decade high growth rates were aided by strong export performance, the availability of foreign exchange, and high rates of savings and investment. Tables 78 and 79 indicate the trends in saving. Relatively high profit rates, stemming from more favourable labour costs and lower costs and tax requirements than were to prevail later, made the private sector the major agent of saving.[2] The role of government as a saver shifted considerably during the period, from a modest contributor (approximately one-tenth of domestic savings) in the first two years, to a gradually eroded relative position, to a position of absolute negative saving in the deficit years leading up to and just following the devaluation of 1967, and increasing to a record percentage role in the 1969-70 period. Throughout the decade new programmes of government expenditure involved a major commitment of funds, and as public saving lagged behind public

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1. Thorbecke, E. and Stoutjesdijk, E., op. cit.
2. The dramatic drop in rates of household saving during the sixties, might raise the question whether the proportions, roughly 40 per cent of Gross Capital Formation in the early sixties, were unusually high. However, a look at the last twenty years, see for instance Table VI in Appendix I, shows that from 1950 until the mid-sixities, there were comparable high rates of household saving. Such high rates were perhaps partly related to income distribution but they were impressively high. With the greater recent emphasis upon the role of government in the economy it seems less likely that earlier rates of household savings will return, and that current strategies if they are to provide for adequate total savings will require strong results of government as a saver.

investment, a gap was opened which was financed increasingly by inflationary means. The ensuing financial problems reached crisis proportions in 1967. The growing gap between public investment and public saving was filled partly by heavy internal borrowing, not simply from the private sector and households but from the banking system, and by the provision of relatively short-term credit (such as supplier and bank credit) at high cost from external sources. The increasing weight of internal and external service costs added to fiscal disequilibrium (see Table 80).

The period 1968 through 1970 was one of general fiscal improvement. The government grew to a strong position as net saver, with its saving reaching record proportions of G. D. P. (see Table 79). We have noted above (Table 65) the tendency toward inflation, which although frequently strong and often present in incipient fashion, is less in Peru than in other South American experience. With the heavy government investment programme from 1964 onwards, the deficits and the manner in which they were financed led to considerable excess demand inflation. Supply inelasticity of foodstuffs, often cited as a feature of the inflationary process in Latin American economies, and rising costs of imported foodstuffs added to inflationary pressures. Although exports grew quickly in the early sixties, imports grew even more quickly from 1965 onwards because of strong income effects, the price effects

Table 78. Composition of national saving (in percentage)

	1960	1961	1965	1966	1969	1970
1. Net saving	77.4	73.3	55.0	53.6	49.7	43.3
(a) private sector and public enterprises	15.1	20.2	44.3	49.4)	37.2)	20.6
(b) households	40.0	42.2	12.6	6.0)	)	
(c) administration	12.3	10.9	-1.9	-1.8	12.5	22.7
2. Capital consumption allowance	26.7	25.1	29.8	28.5	53.8	86.8
3. Net lending & capital transfers from abroad	-4.1	1.6	15.1	17.9	-3.7	-30.0
4. Gross capital formation[1]	100.0	100.0	100.0	100.0	100.0	100.0

[1] 4. = 1. + 2. + 3. but totals may not add because of rounding.

Source: Computed from Table II, Appendix I.

Table 79. Sources of domestic savings (current S/. '000,000)

	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970[1]
Government	1 511	1 557	1 427	824	-154	-408	-492	-1 623	-748	3 401	6 171
Businesses[1]	6 359	6 435	8 028	8 752	12 369	15 858	21 410	19 395	25 525	(24 752	(29 168
Households	4 921	6 006	6 299	4 649	6 329	2 683	1 657	5 239	-5		
TOTAL	12 791	13 998	15 754	14 225	18 554	18 133	22 575	23 011	24 772	28 153	35 339
(percentages)	%	%	%	%	%	%	%	%	%	%	%
Government	11.8	11.1	9.1	5.8	-0.8	-2.3	-2.2	-7.1	-3.0	12.1	17.5
Businesses[2]	49.7	46.0	51.0	61.5	66.7	87.5	94.8	84.3	103.0	(87.9	(82.5
Households	38.5	42.9	39.9	32.7	34.1	14.8	7.4	22.8	0.0		
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
As a percentage of GDP	22.5	21.9	21.5	17.7	19.2	15.8	16.5	14.7	13.3	13.7	18.0

1. Estimated.

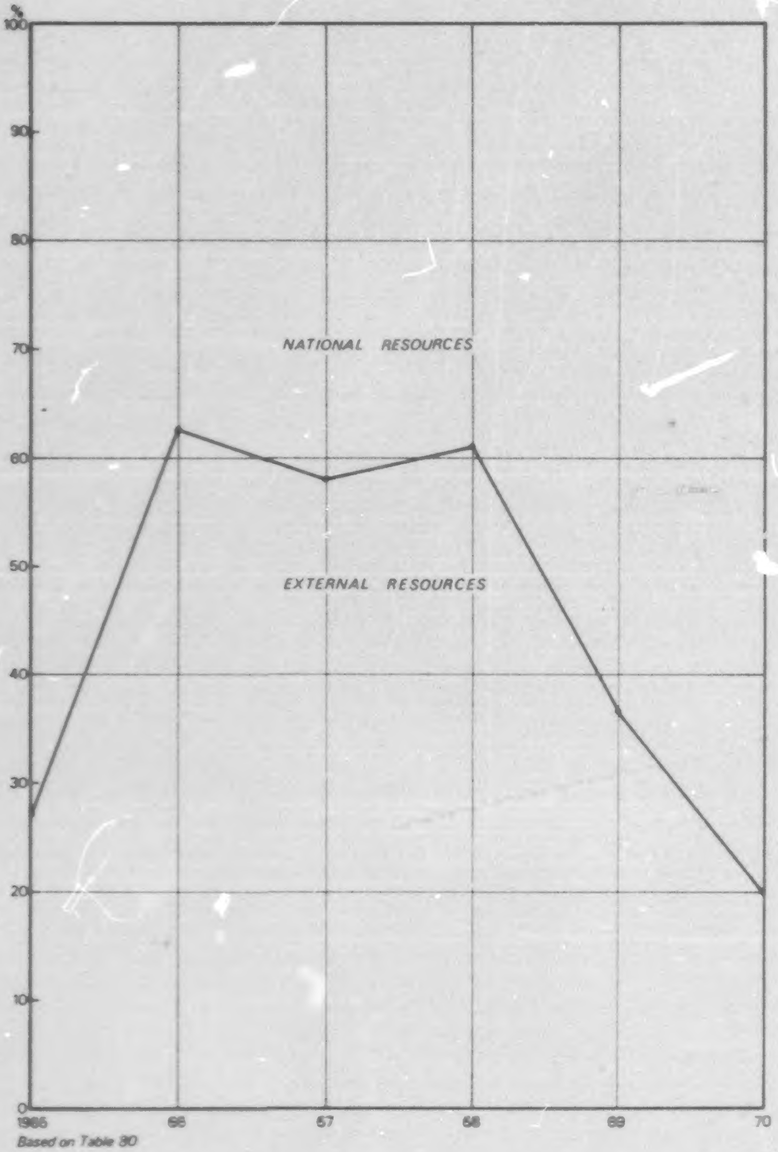
2. Includes all capital consumption allowances.

Source: Central Bank of Peru.

Table 80. Estimated sources of finance of central government capital expenditures 1965-70 (S/.'000,000)

	1965		1966		1967		1968		1969		1970	
	Total	%	Total	%	Total	%	Total	%	Total	%	Total	%
National resources	1 840	72.8	1 228	37.4	1 252	42.0	1 018	39.1	1 808	63.5	3 418	80.0
Foreign resources	688	27.2	2 059	62.6	1 731	58.0	1 585	60.9	1 039	36.5	855	20.0
GENERAL TOTAL	2 528	100.0	3 287	100.0	2 983	100.0	2 603	100.0	2 847	100.0	4 273	100.0

Source: Banco central de reserva del Perú.



Based on Table 30

Chart 13. Distribution of external versus national resources for financing government capital expenditures of the internal inflation, and, in direct consequence as well as cause, an increasingly overvalued domestic currency.

Thus the impact of the inflationary domestic policy mix also helped to bring on the external features of the crisis leading to devaluation. Perhaps Peru has fared better than some other countries, however, in being able to get fairly speedy relaxation of inflationary pressures after adopting necessary stabilizing policies. After the devaluation the national legislature agreed to a programme which had been sought earlier involving new tax measures of considerable significance in the long run. Such tax measures were a necessary complement to a growing public investment programme. Unification of personal and corporate income taxes and new taxes on corporate wealth and real property began to have a favourable effect on public saving. In the years after the crisis, as the reforms were increasingly implemented, the government emerged in its stronger saving role. During the period of stabilization, saving was also increased by the cutback of capital expenditures; by the end of the decade, net borrowing of the government from the banking system was almost eliminated. Inflationary pressures had also abated, and in 1970 prices were growing at one-half the average rate for the entire decade (about 5 per cent).

H. ANALYSIS OF GOVERNMENT REVENUES AND EXPENDITURES

As we have seen, after 1963 the government made substantial efforts toward large-scale public investment and the deliberate modification of what had been an essentially laissez-faire economy of the previous post-war years. In the early sixties a relatively small government sector had positive public savings and a moderate overall budgetary deficit. As Table 81 shows, government receipts grew along with the strong economic growth and even increased proportionally to G. D. P. After 1963 receipts grew less rapidly, especially direct taxes and the corporate profits tax portion of direct taxes in particular. This relatively inelastic tax response to a strong economic growth left an increasingly regressive tax structure, more dependent upon import duties at the very time of the substantial growth in public expenditure. Current expenditures were growing substantially in excess of G. D. P. in the mid-sixties.

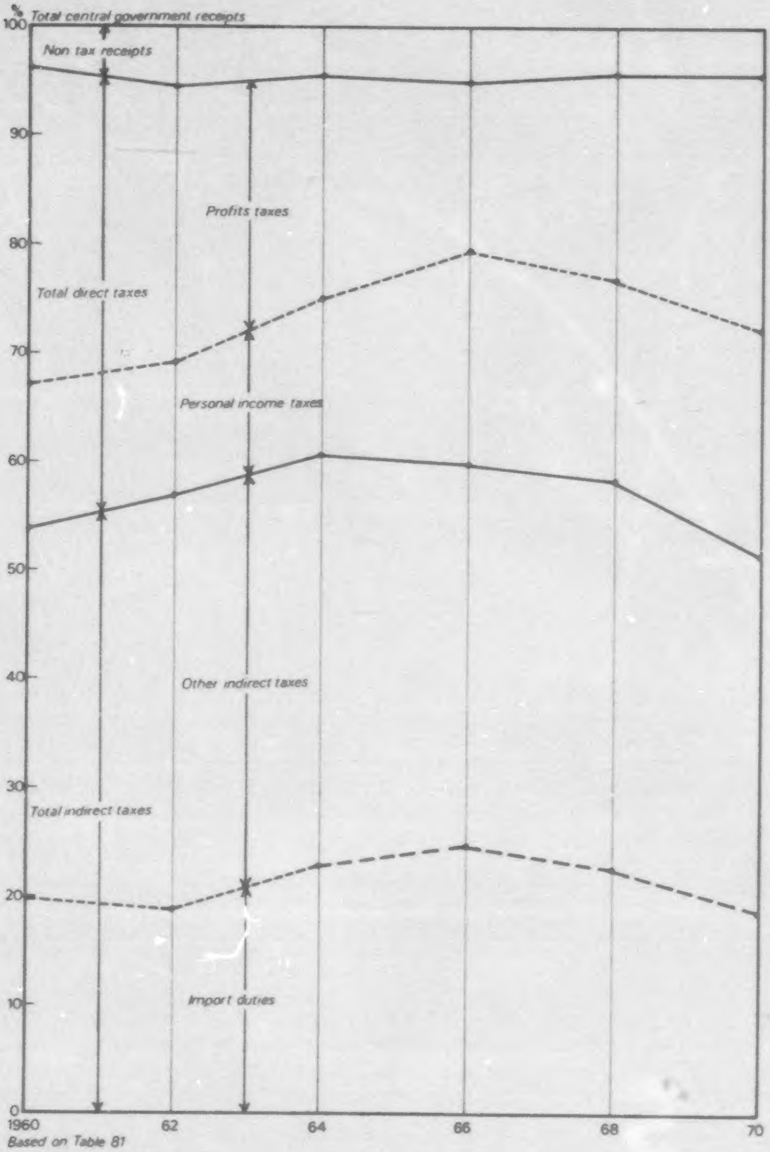
It is clear from Table 81 and Chart 14, that tax reforms after 1968 were beginning to have a significant effect on the structure of receipts. By the end of the decade, direct taxes had become much more important. Profits taxes had increased, and the increase and relative importance of personal income taxes was substantial. These trends are important for what they mean in terms of increased tax elasticity, since direct taxation in the long run would appear to promise a more continuing and reliable progressive tax impact.

Looking at the expenditures side of the government budget we consider current and then capital outlays. Table 82 and Chart 15 indicate the main patterns of current central government spending from 1965-70.

Table 81. Central government receipts (1960-70) (current S/. '000,000)

	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970
A. Indirect taxes											
1. Import duties	1 601	1 965	2 058	2 345	3 619	5 053	5 702	6 508	7 191	7 791	8 060
2. Other indirect taxes	2 781	3 496	4 070	4 928	6 005	6 714	8 194	8 620	11 389	12 883	14 317
Sub-total:	4 382	5 461	6 128	7 273	9 624	11 767	13 896	15 128	18 580	20 674	22 377
B. Direct taxes											
1. Profits taxes	2 375	2 588	2 778	3 196	3 296	3 457	3 583	5 176	6 059	7 776	10 353
2. Personal income taxes	1 073	1 169	1 423	2 010	2 231	3 448	4 585	4 890	5 916	6 613	8 967
Sub-total:	3 448	3 757	4 201	5 206	5 527	6 905	8 168	10 066	11 975	14 389	19 320
C. Non-tax receipts	321	448	595	632	692	997	1 167	1 273	1 315	1 823	1 810
TOTAL	8 151	9 666	10 924	13 111	15 843	19 669	23 231	26 467	31 870	36 886	43 507
Total as a percentage of GDP	14.3	15.1	14.9	16.3	16.4	17.1	16.9	16.8	17.1	17.9	18.5
Percentage composition	%	%	%	%	%	%	%	%	%	%	%
A. Indirect taxes											
1. Import duties	19.64	20.33	18.84	17.89	22.84	25.70	24.55	24.59	22.56	21.12	18.53
2. Other indirect taxes	34.12	36.17	37.25	37.58	37.90	34.13	35.27	32.57	35.74	34.93	32.90
Sub-total:	53.76	56.50	56.09	55.47	60.74	59.83	59.82	57.16	58.30	56.05	51.43
B. Direct taxes											
1. Profits taxes	29.14	26.77	25.43	24.38	20.80	17.58	15.42	19.56	19.01	21.08	23.80
2. Personal income taxes	13.16	12.10	13.03	15.33	14.09	17.53	19.74	18.47	18.56	17.93	20.61
Sub-total:	42.30	38.87	38.46	39.71	34.89	35.11	35.16	38.03	37.57	39.01	44.41
C. Non-tax receipts	3.94	4.63	5.45	4.82	4.37	5.06	5.02	4.81	4.13	4.94	4.16
TOTAL	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Source: Central Reserve Bank of Peru.



Based on Table 81

Chart 14. Distribution of origins of central government receipts

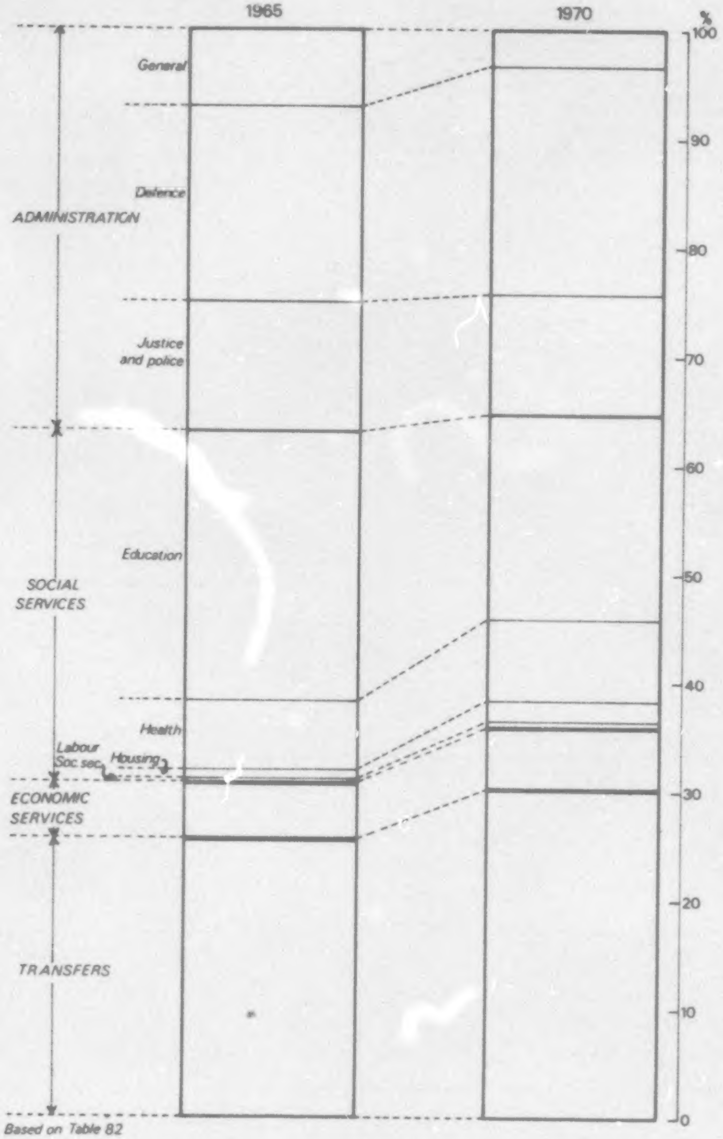
Table 82. Central government current expenditures by function (1965-1970) (current S/.000,000)

	1965	1965	1966	1967	1968	1969	1970[1]	1970
	%							%
PURCHASE OF GOODS AND SERVICES	74.6	12 175.9	14 248.1	16 491.6	18 976.4	19 855.8	22 846.5	69.8
Administration	37.0	6 044.1	6 611.6	8 086.3	10 205.2	10 060.1	11 576.3	35.4
General administration	7.2	1 179.1	1 324.7	930.3	1 106.0	978.5	1 126.4	3.4
Defense	18.0	2 940.7	3 202.0	4 693.1	6 246.2	5 902.6	6 791.8	20.8
Justice and police	11.8	1 924.3	2 084.9	2 462.9	2 855.0	3 179.0	3 658.1	11.2
Social services	32.3	5 269.8	6 693.2	7 242.1	7 820.2	8 189.3	9 421.9	28.8
Education	24.8	4 054.6	5 254.3	5 627.8	6 238.2	6 161.3	6 163.0	18.8
Health	6.3	1 033.7	1 260.9	1 426.1	1 416.9	1 719.4	2 478.6	7.6
Housing and community services	0.7	111.8	99.4	108.9	80.4	229.4	689.8	2.1
Labour and social security	0.4	69.7	78.6	79.3	84.7	79.2	90.5	0.3
Economic services	5.3	862.0	943.3	1 163.2	951.0	1 606.4	1 848.3	5.6
Agriculture and non-mineral resources	1.3	215.6	230.7	248.6	234.9	672.2	773.3	2.3
Energy and mines	0.4	65.5	76.9	71.3	78.0	111.5	128.3	0.4
Transportation and communications	3.4	560.0	610.8	811.9	607.9	771.0	887.2	2.7
Industry and commerce	0.1	20.9	24.9	31.4	30.2	51.7	59.5	0.2
TRANSFERS	25.4	4 144.6	5 285.4	7 079.8	8 561.7	8 595.9	9 889.5	30.2
Transfers to the private sector	13.0	2 119.4	2 832.9	3 791.4	4 487.2	5 225.5	6 011.9	18.4
Public debt service: internal	2.6	427.3	364.1	728.2	591.0	749.0	861.5	2.6
Public debt service: external	0.9	147.7	260.9	414.2	803.9	1 045.7	1 203.0	3.7
Pensions	7.0	1 143.8	1 601.8	2 145.5	2 441.2	2 727.1	3 137.6	9.6
Subsidies	2.4	386.8	597.7	493.9	633.2	698.6	804.4	2.5
Other	0.1	13.8	8.4	9.6	17.9	5.1	5.4	0.0
Grants to local governments	0.7	120.5	110.6	126.9	102.6	27.2	31.6	0.1
To the rest of the public sector	11.5	1 876.5	2 320.4	3 145.3	3 932.3	3 282.5	3 776.8	11.5
Abroad	0.2	28.2	21.5	16.2	39.6	60.7	69.2	0.2
TOTAL of current expenditures	100.0	16 320.5	19 533.5	23 571.4	27 538.1	28 451.7	32 736.0	100.0

1. Estimated.

N.B. Table does not include social security accounts; hence it differs from late government accounts.

Source: Central Reserve Bank of Peru.



Based on Table 82

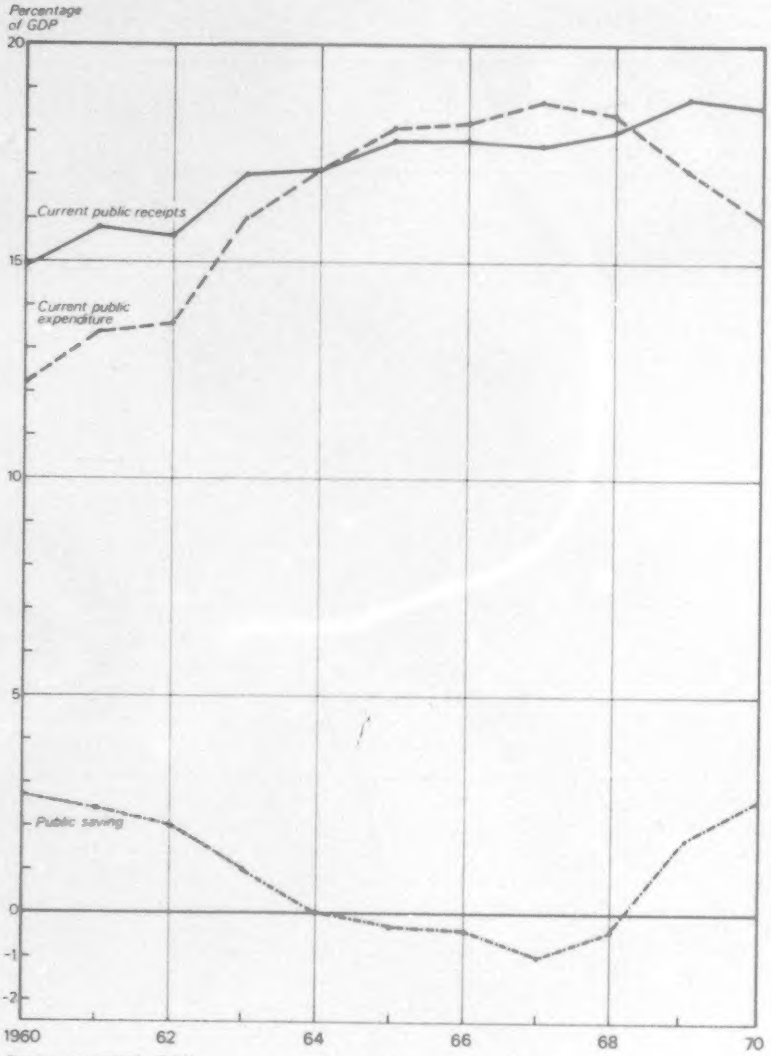
Chart 15. Proportional distribution of central government current expenditures by function

Although there was an overall increase in the proportions of current expenditure covering general administration for the period as a whole, the stabilization effort after 1967, aided by a freeze on wages and salaries in the government sector, did stem growth of these expenditures. In 1969 for example, they did not keep up with price increases. Social services fell relatively during the period, from 32.3 per cent to 28.8 per cent. It is significant here that after a period of strong earlier growth, educational outlays ceased to grow during the entire 1968-70 period, and in fact fell significantly in real terms. Such expenditures stayed at a constant level, roughly S/. 6.2 billion for three years, while the cost-of-living index rose roughly 30 per cent. Health expenditures continued to grow, especially strongly during the last two years, as did housing and community services expenditures. The other major shifts were a proportional rise in defense expenditures and a substantial rise in transfers to the private sector due to the growing burden of debt service incurred by the deficit financing of the mid-decade. Economic services absorbed a fairly constant percentage; but in line with priority interests in agricultural development, that area took more public expenditure, and transport and communications relatively less.

Capital expenditures of central government reflect similar trends. (See Table 83.) Agriculture expenditures are more important, transport and communication less, as the emphasis is seen to shift from infrastructural to more immediately productive investment. Total capital spending in the social services declined absolutely as well as relatively during most of the last half decade, but resumed their position in the economically stronger period of 1970. Housing, community, and health services have grown. But the decline of educational capital expenditure is substantial and striking, as we shall examine in a later section. It is partly a matter of declining activity in this area and partly one of different financing methods. Debt amortization requirements, particularly external requirements, grew very rapidly, as the accounts show.

The public investments in agriculture reflect, as we have noted, recent emphasis on production for import substitution. There will be considerable pressure to maintain and even to increase this commitment of funds for projects such as the development of new production areas, irrigation works and machinery pools, and storage and marketing facilities, particularly since public agencies have broadened their role in marketing and distribution. Irrigation requires major funds. Agrarian reform, besides its challenging reorganization tasks, involves funds for acquisition costs and new modes of providing credit to smaller farmers.

Direct investment in industry was still limited, even after a period of greater government involvement in the economy, but has been growing more rapidly in recent years in such fields as oil refining, metals refining, fertilizer production, and increasing indirect participation in enterprises such as steel making. It is expected that the government will pursue industrial production and participation in such



Based on Appendix I, table V

Chart 16. Relationship of government saving to GDP (in percentages of GDP)

Table 83. Central government capital expenditures by function (1965-1970)(S/. '000 000)

	1965 %	1965	1966	1967	1968	1969	1970	1970 %
ON GOODS AND SERVICES								
Administration	2.9	190.2	141.4	116.6	178.4	178.4	605.0	4.1
Social services	8.6	562.3	362.3	444.8	432.5	390.9	952.0	6.5
Education	6.1	396.4	180.8	151.1	47.4	35.4	269.0	1.8
Health	0.1	8.3	3.5	7.9	10.6	87.1	164.0	1.1
Housing and community services	2.3	152.7	176.2	285.3	373.5	268.3	519.0	3.5
Labour and social security	0.1	4.9	2.9	0.5	1.0	0.1	-	0.0
Economic services	27.3	1 783.6	2 815.0	2 437.4	1 996.8	2 507.1	3 202.0	21.8
Agriculture and non-mineral resources	5.2	340.3	571.6	571.6	464.4	771.8	1 213.0	8.3
Energy and mining	1.0	64.4	96.0	56.3	91.4	61.0	38.0	0.3
Transportation and communications	21.1	1 378.5	2 145.2	1 806.3	1 437.6	1 673.5	1 899.0	12.9
Industry and commerce	0.0	0.4	2.2	3.2	3.4	0.8	52.0	0.4
Sub-total	38.8	2 536.1	3 318.8	2 998.8	2 607.7	3 076.4	4 759.0	32.4
ON TRANSFERS								
Transfers of capital[1]	40.7	2 661.8	2 575.1	3 281.4	3 478.9	3 203.5	3 821.0	26.0
Debt amortization : internal	16.0	1 047.3	1 185.0	987.6	1 119.3	1 649.0	3 390.0	23.1
Debt amortization : external	4.5	294.0	416.0	846.7	2 449.1	2 452.7	2 710.0	18.5
Sub-total	61.2	4 003.1	4 176.1	5 115.7	7 047.3	7 305.2	9 921.0	67.6
TOTAL	100.0	6 539.2	7 494.9	8 114.5	9 655.0	10 381.6	14 680.0	100.0

1. To decentralized agencies.

Source: Central Reserve Bank of Peru.

Table 84. Principal export products (1960-70) (US$'000)

	1960		1961		1962		1963		1964	
	Total	%	Total	%	Total	%	Total	%	Total	%
Primary and intermediate goods	410 978	92.49	467 105	91.56	505 237	90.87	516 214	93.00	640 341	93.54
Mineral products	190 335	42.84	210 387	41.24	189 256	34.04	192 421	34.66	263 083	38.43
Fish products	50 002	11.25	69 777	13.68	119 755	21.54	120 210	21.66	165 630	24.19
Petroleum-derivatives	17 923	4.03	14 460	2.83	13 145	2.36	9 831	1.77	9 636	1.41
Agricultural products	152 718	34.37	172 481	33.81	183 081	32.93	193 752	34.90	201 992	29.51
Capital goods	-	-	-	-	-	-	-	-	-	-
Consumption goods[1]	33 365	7.51	43 047	8.44	50 757	9.13	38 876	7.00	44 225	6.46
TOTAL EXPORTS	444 347	100.00	510 152	100.00	555 994	100.00	555 090	100.00	684 576	100.00

1. Includes 'non-traditional' products for export such as : canned foodstuffs, cement, plywood, cotton textiles, floor coverings, footwear, underwear, silver articles, copper wire, electrical parts, telephone cables, etc.

Source: Central Reserve Bank of Peru.
Export Committee National Society of Industry

areas as mineral refining and perhaps the capital goods sector. Similarly, the fisheries industry has been recently reorganized under public enterprise. Electric power will expand to meet the high growth rates of the industrial investment programme, and will also grow because of the government's concern for rural electrification.

Transport and communications expenditures have absorbed major funds, about three-fourths in highway construction, with the rest going largely to port and airport construction projects. Few public funds have gone to railway and telecommunications development.

Summing up the picture of public capital expenditure, investments peaked in 1966, fell in the 1967-69 period (especially in real terms) and resumed strong rates in 1970. The earlier emphasis on infrastructural spending gave way to an emphasis on industrial and agricultural projects, the so-called directly productive activities. The planned expansion of the industrial sector will, as it often does in developing countries, continue to raise questions of the possible constraint of absorptive capacity for new investment as much as questions of availability of finance, particularly when industrial structure is to be changed rapidly at public direction.

Some of the factors which have improved the central fiscal position of the late sixties include better budgeting processes, more centralized control in the rest of the public sector (i. e. the public enterprises), and efforts at centralized management of cash resources. These improvements, a steadily proceeding objective of the last decade, are still a challenge. With a larger public investment programme, there

1965		1966		1967		1968		1969		1970	
Total	%	Total	%	Total	%	Total	%	Total	%	Total	%
644 168	94.10	748 081	94.87	716 205	96.47	810 171	96.47	844 653	95.82	979 000	94.85
286 776	41.90	365 280	46.32	361 765	48.73	409 209	48.73	471 266	53.46	465 600	45.11
185 656	27.12	205 408	26.06	201 187	27.10	233 479	27.80	219 626	24.92	346 700	33.59
9 255	1.35	7 399	0.94	11 358	1.53	8 315	0.99	7 558	0.86	7 900	0.77
162 481	23.73	169 994	21.55	141 895	19.11	159 168	18.95	146 203	16.58	158 800	15.18
-	-	-	-	-	-	-	-	-	-	-	-
40 420	5.90	40 465	5.13	26 217	3.53	29 622	3.53	36 843	4.18	53 200	5.15
684 588	100.00	788 546	100.00	742 422	100.00	839 793	100.00	881 496	100.00	1 032 200	100.00

is also the need for continued improvement of tax collection capability. We have noted recent improvements in this area, and further progress is important to keep the income elasticity of the tax structure high as development proceeds. With the strategies that the government has recently adopted, public saving is a critically important portion of national saving capability.

I. BALANCE OF PAYMENTS TRENDS

We have already noted the importance of strong export growth as a major propellant for the Peruvian economy at its present stage of production. Peru has a fairly well diversified export sector. In the early sixties export growth was led by fishmeal and mineral production. As can be seen from Tables 84 and 85, both price and total value performance in these areas were strong until about mid-decade. Fishing products then moved ahead of agricultural products in the export bill, as the latter declined absolutely in the years 1964-67 in dollar value. At the time of the 1967 crisis, there was an actual drop in the dollar value of export earning, due partly to the drop in production of some commodities, but aggravated by a drop in key commodity prices such as those for copper and fishmeal. In spite of the export diversification that Peru enjoys, price sensitivity of individual export products is large, and both price and production performance helped to produce the much more favourable export picture of 1969-70. In those two years total exports were up 23 per cent over the 1968 level. Copper prices had risen between 15 per cent and 20 per cent, and fish product prices had risen almost 70 per cent. The total balance of payments is shown in Table 86.

The import side of the balance of merchandise trade showed faster expansion than exports during the 1960-67 period. Imports also grew faster than G. D. P., partially as a result of pressure for capital goods and intermediate input goods in the fast growing industrial sector, but also because of the growing food deficit already described. Also, import goods were not totally shielded by exchange and trade controls from price pressures created by an increasingly understated foreign exchange rate. Domestic industrial development of import substitutes did help to prevent imports (other than foodstuffs) from rising and their proportion in the total import bill fell significantly. Table 87 shows the composition of imports. In the period leading up to 1967, there was probably some acceleration of imports for speculative stocking.

The devaluation of 1967 helped to bring a significant drop in imports during the subsequent two years. Higher tariffs and quantitative restrictions, the general slackening of the economy, and the negative acceleration effects of a fall in investments all contributed to the drop in imports. Table 87 also shows how capital goods fell more than intermediate goods, and indicates the probable sensitivity of capital goods imports to future rates of capital formation.

The services balance (see Table 86) deteriorated steadily throughout the sixties, except for a levelling-off in the last two years. Growth of service payments largely followed profit remittances related to the vigorous export performance, though net purchase of 'other' services expanded significantly as well. The result of these forces taken together was that import growth exceeding export growth pushed the current account into deficit after 1964 and until the 1967 crisis. In later years the reversal of these trends has not only produced recovery but a modest surplus on current account in 1969 and a record surplus of almost $200 million in 1970. The rest of the picture is reflected in the capital accounts and external debt which the next section considers.

J. CAPITAL MOVEMENTS AND EXTERNAL DEBT

In the period 1964-67, the current account deficit and the central government budget led to substantial increases in internal and external debt. Table 88 shows these trends. Much of the more recently contracted debt was, as is apt to be the case in crisis periods, of shorter maturity and higher interest cost. Table 89 shows the increasing burden of servicing such debt relative to public revenues, relative to exports, relative to G. D. P., and relative to the external debt outstanding itself. With the improvements of 1968-70 came a much improved current account position. The government was also able to re-schedule foreign loans to moderate immediate servicing burdens.

Table 85. Price indices of principal export products (1963 = 100)[1]

Products	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970
Fish products	86.7	81.9	98.0	100.0	105.6	117.2	144.5	113.1	96.2	120.7	165.5
Cotton	100.8	95.8	95.0	100.0	108.2	103.1	101.6	113.2	112.6	102.7	106.3
Sugar	70.7	90.1	88.3	100.0	117.2	80.0	85.5	88.6	100.6	116.0	116.3
Coffee	155.5	104.2	102.9	100.0	134.7	133.9	137.6	112.3	108.8	112.4	154.7
Wool	102.5	106.8	99.1	100.0	115.1	133.1	111.4	110.5	87.6	91.5	113.3
Copper	105.5	99.0	100.6	100.0	107.5	133.5	198.1	185.8	189.8	247.2	217.4
Iron	103.2	107.3	100.5	100.0	109.9	108.1	118.1	127.2	123.3	119.8	118.1
Silver	71.6	73.7	84.8	100.0	107.9	104.4	106.0	128.9	182.2	148.6	145.4
Lead	134.9	115.0	88.4	100.0	145.4	184.3	170.7	142.7	135.9	162.0	160.2
Zinc	124.9	109.0	102.8	100.0	167.9	158.4	200.7	153.2	135.4	163.0	180.6
Petroleum and derivatives	118.1	109.3	109.3	100.0	100.0	101.6	103.1	99.7	101.7	104.6	103.4

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[1] Indices of prices in dollars.

Table 86. Balance of payments (US$'000, 000)

	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970[1]
Goods and services	- 1.8	- 35.2	- 54.4	- 99.7	- 1.3	-152.4	-240.7	-312.4	-64.2	- 7.5	109.2
Exports FOB	444.3	510.1	556.0	555.1	684.6	684.6	788.5	742.4	839.8	881.5	1 032.2
Imports FOB	-341.0	-428.6	-478.4	-517.9	-517.7	-659.7	-811.2	-810.1	-672.9	-663.7	-695.2
Goods balance	103.3	81.5	77.6	37.2	166.9	24.9	- 22.7	- 67.7	166.9	-217.8	337.0
Freight and insurance	- 45.7	- 53.3	- 63.0	- 62.5	- 74.9	- 83.3	- 85.7	- 87.5	- 60.7	- 58.3	- 55.5
Investment income	- 54.9	- 62.6	- 66.1	- 72.0	- 70.3	- 82.0	-112.7	-148.6	-138.2	-145.8	-135.5
Other	- 4.5	- 0.8	- 2[illegible]	- 2.4	20.4	- 22.0	- 19.6	- 8.6	- 32.2	- 21.2	- 36.8
Services balance	-105.1	-116.7	[illegible]32.0	-136.9	-165.6	-187.3	-218.0	-244.7	-231.1	-225.3	-227.8
Transfer payments	20.6	26.8	18.2	19.0	14.8	24.1	27.7	29.5	36.7	31.3	90.2
Balance on current account	18.8	- 8.4	- 36.2	- 80.7	16.1	-138.3	-213.0	-282.9	- 27.5	23.8	199.4
Private long-term capital	16.1	4.1	18.1	3.7	11.2	48.8	2.3	19.6	- 25.5	- 8.7	- 78.3
Official	- 9.3	- 8.1	21.8	53.5	71.8	123.8	186.9	169.2	74.1	80.7	- 59.6
Errors, omissions, and short-term capital	7.1	46.7	2.5	42.0	- 74.1	- 19.6	- 0.4	63.1	- 36.5	- 58.7	121.3
TOTAL above	32.7	34.3	6.2	18.5	25.0	14.7	- 24.2	- 31.0	- 15.4	37.1	182.8
Central reserve bank Net foreign activity	- 32.7	- 34.3	- 6.2	- 18.5	- 25.0	- 14.7	24.2	31.0	15.4	- 37.1	-182.8

[1] Preliminary figures.

Source: Central Reserve Bank of Peru.

Mid-1970 saw exchange control measures which by law concentrated foreign exchange holdings in the official banking system. Peruvians were required to bring back assets held abroad. With the improved trade position, further postponement of some amortization, and significant capital repatriation, the reserve position strengthened considerably by 1970. Table 90 shows the evolution of international reserves through 1969.

Preliminary accounts show that the current account and the basic balance of the balance of payments slipped back into a negative position in 1971-72 period. Export growth ended while imports continued to grow. Incoming transfer payments dropped off and service payments, particularly interest payments on debt, continued to rise. [1]

K. SUMMARY

The key sectors for strong growth in the decade were manufacturing, fisheries, commerce, construction, utilities, and other services. Agricultural growth was relatively weak. Although the country has a strong and well-established mining sector its growth has not in itself been ahead of that of the economy as a whole, and it has scarcely played the role of a leading sector in recent years. Peru is at the stage where manufacturing has become a significant part of total activity, and much of the future development will depend on continued high rates of expansion of this sector. But an equally important key to balanced and full future development would appear to lie in a more generally productive agriculture, increasingly serving the internal needs of the economy, and a stronger growth rate for mineral exploitation. The economy weathered a fairly severe economic crisis in the late sixties. Growth rates would not appear yet to have firmly reasserted former record levels. There was stronger growth in the 1970-71 period than at any time since the mid-sixties, even though there appears to have been some slackening again in 1972.

The agricultural economy has withstood the difficult beginning period of adjustment to a major programme of agrarian reorganization, and the potential for growth is substantial if detailed plans can be implemented successfully. Nothing less than a social transformation is involved. There is also new potential from petroleum production east of the mountains to be added to the large potential of unexploited mineral resources of other kinds.

Our task in the next chapter is to attempt an estimate of the likely future course of the economy, given both positive factors to be anticipated and negative ones to be overcome. The crucial variables, in

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[1] Instituto Nacional de Planificación, Peru, Plan Bienal para 1973-74, Proyecto, Lima, April 1973, p. 14[illegible].

Table 87. Composition of imports by end use products (1960-1970) (US$'000)

	1960		1961		1962		1963		1964	
	Total	%	Total	%	Total	%	Total	%	Total	%
Primary and intermediate goods	156 235	41.91	186 154	39.76	207 475	38.21	225 184	38.92	222 581	37.91
(a) Fuels and related	17 201	4.61	15 650	3.34	16 430	3.03	15 620	2.69	18 250	3.11
(b) For agriculture	9 415	2.53	10 007	2.13	10 418	1.92	9 389	1.63	10 175	1.84
(c) For industry	129 619	34.77	160 497	34.29	180 627	33.26	200 175	34.60	193 556	32.96
Capital goods	134 662	36.12	181 031	38.68	233 794	43.06	237 164	40.99	228 657	38.94
(a) For construction	13 831	3.71	20 054	4.29	24 828	4.57	18 649	3.22	21 160	3.60
(b) For agriculture	10 762	2.89	14 038	2.99	14 591	2.69	14 809	2.56	14 794	2.52
(c) For industry	71 351	19.14	96 430	20.60	142 231	26.19	145 273	25.11	138 358	23.56
(d) Transport equip.	38 713	10.38	50 509	10.80	52 144	9.61	58 433	10.10	54 345	9.26
Consumption goods	80 297	21.54	99 431	2[illegible].24	100 175	18.46	114 326	19.76	133 584	22.76
(a) Consumer non-durables	45 289	12.15	51 8[illegible]5	11.07	52 258	9.63	56 130	9.70	69 700	11.87
(b) Consumer durables	35 008	9.39	47 516	10.17	47 917	8.83	58 196	10.06	63 884	10.89
Miscellaneous	1 579	0.43	1 491	0.32	1 477	0.27	1 861	0.33	2 291	0.39
TOTAL	372 773	100.00	468 107	100.00	542 921	100.00	578 535	100.00	587 113	100.00

Source: Central Reserve Bank of Peru.

summary, concern the path of future agricultural development for domestic foodstuffs and for exports, the timing and future extent of new mineral and petroleum production (and world pricing trends which at the moment appear generally favourable), the uncertain future of the fisheries, and just how fast the manufacturing sector can reasonably be expected to grow. An over-riding question is the extent to which capital resources, both domestic and external, can be mobilized - depending in turn on national progress in progressive taxation, encouragement of national saving, building of profitable surpluses in public enterprises, or a fortuitous combination of these. Capital formation rates will need to be higher than in recent years for

1965		1966		1967		1968		1969		1970	
Total	%	Total	%	Total	%	Total	%	Total	%	Total	%
299 422	40.82	309 407	37.99	322 331	39.41	309 657	48.62	305 607	51.01	304 900	49.31
20 518	2.79	25 630	3.15	24 471	2.99	23 655	3.71	18 879	3.13	12 200	1.97
14 601	1.93	10 619	1.30	12 279	1.50	15 593	2.45	11 264	1.90	11 800	1.91
264 843	36.10	273 158	33.54	285 581	34.92	270 409	42.46	275 464	45.98	280 900	45.43
283 549	38.64	348 509	42.80	343 442	42.00	224 703	35.28	203 725	34.00	224 200	36.26
29 513	4.02	27 321	3.36	20 492	2.51	13 186	2.07	12 646	2.11	13 000	2.11
19 026	2.59	21 680	2.66	18 271	2.23	7 528	1.18	5 613	0.94	8 300	1.34
169 171	23.06	197 096	24.20	195 700	23.93	147 317	23.12	130 877	21.84	136 000	22.00
65 839	8.97	102 412	12.58	108 979	13.33	56 672	8.90	54 589	9.11	66 900	10.81
148 141	20.19	155 689	19.13	150 737	18.44	99 987	15.71	89 469	14.95	88 300	14.29
85 108	11.60	83 093	10.20	101 560	12.42	80 973	12.73	71 730	11.97	71 900	11.63
63 033	8.59	72 596	8.93	49 177	6.02	19 014	2.98	17 739	2.98	16 400	2.66
2 525	0.35	653	0.08	1.197	0.15	2 454	0.39	245	0.04	900	0.14
733 637	100.00	814 258	100.00	817 707	100.00	636 801	100.00	599 046	100.00	618 300	100.00

sustained high growth to resume. The other ingredient will be the attraction of sufficient foreign capital on favourable economic terms which are also compatible with aims for greater national economic independence. Growth will also depend upon the extent to which cyclical recession and major financial crisis can be avoided. The timely implementation of the educational reform will assist, but will also require as a pre-condition, the maximum performance of the economic system. This sharp interdependence will become clearer as we test the probable growth rates for the economy in the next chapter, and the costs of further educational expansion and educational reform in Chapter VI.

Table 88. Trend of total public debt

	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970
Internal public debt (S/.'000,000)	3 428.8	3 414.6	3 616.6	4 234.3	5 729.0	9 466.5	12 861.7	15 047.8	15 172.4	18 627.7	30 748.4
Exchange rate S/. US$	26.30	26.81	26.81	26.82	26.82	26.82	26.82	38.90	43.36	43.57	43.41
External public debt (US$'000,000) (1)	95.0	109.9	148.6	202.5	290.9	376.7	571.0	684.9	785.6	914.8	963.4
Internal public debt (US$'000,000)[a]	130.4	127.4	134.9	157.9	213.6	353.0	479.6	386.8	349.9	427.5	708.3
Public debt (1 + 2) (US$'000,000)	225.3	237.2	283.4	360.3	504.5	729.7	1 050.6	1 071.7	1 135.5	1 342.3	1 671.7
GDP (3)[a] (US$'000,000)	2 501.2	2.655.8	2 890.4	3 000.7	3 203.3	3 359.6	3 550.5	2 560.4[b]	2 328.6	2 356.1	2 530.3
External debt as a percentage of GDP (1)/(3)	3.60	4.14	5.14	6.75	9.08	11.21	16.08	26.75	33.74	38.82	38.07
US$ value of exports of goods and services (4)	444.3	510.2	556.0	555.1	684.6	684.6	768.5	742.4	839.8	881.5	1 032.2
External debt as a percentage of exports (1)/(4)	21.39	21.54	27.72	36.48	42.50	55.03	72.42	92.25	93.55	103.77	93.33

a. Converted at the rate of exchange appropriate to each year.

b. According to the exchange rate of December 1967.

Source: General office of public credit, Ministry of Economics and Finance.

d of total public debt

	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970
debt	3 428.8	3 414.6	3 616.6	4 234.3	5 729.0	9 466.5	12 861.7	15 047.8	15 172.4	18 627.7	30 748.4
/. US$	26.30	26.81	26.81	26.82	26.82	26.82	26.82	38.90	43.36	43.57	43.41
debt (1)	95.0	109.9	148.6	202.5	290.9	376.7	571.0	684.9	785.6	814.8	963.4
debt a	130.4	127.4	134.9	157.9	213.6	353.0	479.6	386.8	349.9	427.5	708.3
2)	225.3	337.2	283.4	360.3	504.5	729.7	1 050.6	1 071.7	1 135.5	1 342.3	1 671.7
	2 501.2	2.655.8	2 890.4	3 000.7	3 203.3	3 359.6	3 550.5	2 560.4[b]	2 328.6	2 356.1	2 530.3
a GDP	3.60	4.14	5.14	6.75	9.08	11.21	16.08	26.75	33.74	38.82	38.07
ports of vices (4)	444.3	510.2	556.0	555.1	684.6	684.6	783.5	742.4	839.8	881.5	1 032.2
a exports	21.39	21.54	27.72	36.48	42.50	55.03	72.42	92.25	93.55	103.77	93.33

the rate of exchange appropriate to each year.

the exchange rate of December 1967.

office of public credit, Ministry of Economics and Finance.

Table 89. Trend of service on public external debt (US$'000)

	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970
Service of external public debt	6 992	12 721	20 097	25 645	24 181	36 414	52 464	97 186	127 606	142 546	175 665
As a percentage of total external debt	7.36	11.58	13.53	12.67	8.31	9.67	9.19	14.19	16.24	15.58	18.23
As a percentage of total public revenues	2.16	3.38	4.71	5.02	3.93	4.77	5.79	13.63	16.53	16.04	17.42
Trend of debt service[1]											
Service of external debt outstanding (capital + interest)	7 254	13 547	21 354	27 801	26 740	39 954	56 473	102 521[2]	136 475	149 403	181 810
As a percentage of GDP	0.29	0.51	0.74	0.93	0.83	1.19	1.50	4.00	5.86	6.34	7.19
As a percentage of exports of goods and services	1.6	2.66	3.84	5.00	3.91	5.84	7.16	13.81	16.25	16.95	17.61

1. Includes private debt. 2. At the exchange rate of December 1967.

Source: General Office of Public Credit, Ministry of Economics and Finance.

Table 90. International reserves (US$'000 000)

Year	Reserves	Year	Reserves
1959	59	1965	175
1960	76	1966	155
1961	110	1967	126
1962	117	1968	111
1963	135	1969	117
1964	160		

Source: International Monetary Fund, International financial statistics, 1971 Supplement, Washington D.C., 1971.

V. The economy until 1980

In this section we test a set of assumptions concerning the possible shape and scope of the Peruvian economy in 1980. It is not possible to make a full prediction of what will actually occur, and predictive abilities are sharply limited where data are incomplete. Many variables including significant non-economic ones are apt to play a determining role. Our analysis does not utilize a fully complex simultaneous econometric model. Such efforts are not only beyond the purposes of this study of the economic background against which to study educational development, but are similarly hampered by lack of data on some of the most important indicative economic variables. We have made a series of explicitly stated plausible assumptions, tested these for internal consistency, and followed their implications for identifying a range within which economic performance is apt to be found at the end of the decade of the seventies. As such our 'projections' form no more than a realistic economic backdrop against which to guage future possibilities and capabilities for the finance of the intended educational goals.[1]

We can, for instance, see clearly that even to match Peru's remarkable real growth of the past decade will require immense and growing capacity to organize new enterprise, to solve agricultural production problems, to mobilize savings either voluntarily or through improved taxation capacity or both, and in the process to draw upon external resources on an unprecedented scale. An example such as is presented here may be most useful in pointing out the combination of resource requirements and economic performance that will be needed, if a given level of real growth is to be achieved, rather than to attempt to predict with any necessary accuracy the exact combinations which will occur.

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1. For the basic level and method of approach used here see, for instance, Lewis, Arthur W., Development planning, the essentials of economic policy, Harper, 1966, especially Chapter 3, 'The arithmetic of planning'.

It is perhaps most useful to test two growth assumptions providing a range within which ten-year performance is thought likely to occur: growth of G. D. P. at 4. 5 per cent per annum, and at 6 per cent per annum. The 4. 5 per cent assumption is thought to be a minimum. As we have seen above in Table 71, it would be somewhat ahead of that achieved in the last five years of the sixties, a period including very strong but also crisis years, but somewhat less than the rate achieved for the decade as a whole. Such growth would be about equal to the post-war average, and more nearly equal to that of the rest of South America. This is a minimum assumed. The 6 per cent maximum assumed would exceed the average of the last decade, but it is probably close to what would have been achieved without the economic crisis of the late sixties. If sustained for ten years, this would indeed be excellent performance. These assumptions are checked by a projected sectoral breakdown shown in Table 91, which it is instructive to compare with Table 70. In the minimum G. D. P. growth case (Assumption I), we project agriculture at a rate which nonetheless exceeds that of the last decade, mining at about the same rate but with the assumption of significant growth in the latter half of the seventies producing a modest rate increase, and manufacturing with some slowing of growth relative to recent rates. The high G. D. P. growth assumption (Assumption II) includes agriculture at substantially increased rates, in effect a major reversal of recent trends, the mining sector with major new output occurring at least by the latter half of the decade, and a manufacturing sector matching its remarkable performance of the sixties.

Our first task is to project the services sector. In both G. D. P. projections we have assumed the same ratio of services to commodity production as existed in 1970, on the assumption that services, already a high percentage, could not grow relatively at Peru's present stage of development without some major development of an 'export' capability such as occurs in countries with numerically significant possibilities in tourism. There is generally a strong consistency in the relationship of services to Gross Domestic Product as we have seen in Table 70 of the previous chapter. The 1970 percentage structure is shown on the next page.

Table 70 shows that in the sixties, construction has remained a relatively constant part of G. D. P. except for the 1968-69 recession years. Commerce, a relatively larger industry, has been structurally constant as has been the housing sector. Energy, although displaying steady growth, has been a relatively small industry. Government services at about 10 per cent of G. D. P. have shown proportional increase in the last part of the decade.

Our assumption that the services sector as a whole will grow at about the equivalent of the rate of growth of G. D. P. as a demand-led sector is in keeping with the assumptions of the Biennial Plan of 1973-74[1]

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1. Peru, Instituto Nacional de Planificación, Plan Bienal para 1973-74, Proyecto, Lima, April 1973.

Service industries	1970 structure % of G. D. P.	Biennial Plan average annual growth 1971-74[1]
Construction	4. 1	17. 1
Commerce	17. 4	6. 9
Energy (electricity & gas)	1. 0	10. 0
Housing	5. 3	4. 6
Government	10. 0	4. 8
Other	18. 2	7. 1
Health	-	6. 5
Education	-	7. 6
Transport	-	9. 1
Miscellaneous	-	6. 4
G. D. P.	100. 0	6. 3

1. Peru, Instituto Nacional de Planificación, Plan Bienal para 1973-74, Proyecto, Lima, April 1973, p. 103.

Source: Table 70.

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which gives average expected growth in 1971-74 as can be shown above. The highest middle-term growth rates are expected in construction and energy, but these together constitute no more than about one-tenth of the entire services sector. The plan for this period calls for slightly higher growth rates in education, the sector of our major concern, and transport, but the other sectors will grow at about the same or lesser growth rates than that they ascribe to G. D. P. In summary, we believe the overall projection based on a constant proportion of G. D. P. is reasonable for long-term rough projections.

A. AGRICULTURE

In earlier sections, we have described the challenge which agriculture presents to economic development - the growing food deficit, and the loss of agricultural export crops in some areas, not totally replaced by new export potential in other areas. Better performance must come from this sector if assumed overall growth is to be achieved. The Development Plan 1971-75 (see Section I. on the Peruvian Plan) calls for major public expenditure in this area, a large part of which will be devoted to irrigation and water development. For growth of the sector as a whole there is a need to integrate the less commercialized and subsistence parts of the sector into the market economy. Ingredients of this process are a large-scale agrarian reform programme involving land redistribution and new settlement, technical and financial assistance, the spread of better techniques and provision on a larger scale of manufactured inputs to the sector. If the process of expropriation and redistribution of land can be completed by mid-decade, if private farmers' decisions to invest are not restricted by uncertainty of further changes in reform, and if new co-operatives prove to be substantial sources of investment capital for agriculture, the higher agricultural targets seem attainable. In any case, the challenges which are involved in meeting the assumed growth rates in this sector are substantial.

The fishing industry has been an important earner of foreign exchange, although its production has been recently subject to sharp fluctuations due to the changing fortunes of the catch; as we have noted, the long-term prospects for growth are uncertain due to marine ecological conditions in the fishing grounds. The value of the fishing to sector output showed some resurgence in 1970 but weakened again in 1971-72. Growth in agriculture in general has been smaller in 1971-72 than our lower projection estimate, although a momentum of improvement after the heaviest years of impact of the reorganization of agricultural ownership and management which are now under way may take some time to achieve. The 1973-74 Biennial Plan sees both fishing and agriculture in strong growth again in those two years.

It is important to note the relationship between agricultural and non-agricultural economic goals. It could be argued that in Peru, as well as in much of the rest of South America, important early opportunities for import substitution in the manufacturing sector have already been exhausted. It may be the case that high growth rates and a wider spread of incomes in the agricultural sector are increasingly essential to maintaining high rates of industrial growth. This brings us to a direct look at the manufacturing sector.

E. MANUFACTURING

Much of the past growth of manufacturing has been aided by the existence of an urban, medium and higher income market, limited in total scope and protected to a degree by domestic and foreign trade commercial policies. Since growth of the manufacturing sector has been exceeding the growth of such a demand group, continued high growth of the sector beyond this stage of 'first-round' import substitution will require broadened demand from a wider income distribution, both sectorally as mentioned in the case of agriculture, and geographically, since manufacturing output has been so concentrated in a limited urban setting. Future growth of manufacturing will be less geared to provision of consumer goods with heavy imported components, and more toward the production of backwardly-linked intermediate goods, capital goods, and export manufactures. The latter are the hopes of Peru's participation in regional integration efforts such as the Latin American Free Trade Association and the Andean Group. Such manufactures are

Table 91. Projected sectoral growth (all values 1970 S/.'000,000)

	1960	Percentage structure 1965	1970	Value 1970	(Assumption I) Assumed 4.5% GDP growth: Assumed sectoral rates	Value 1980	% structure 1980	(Assumption II) Assumed 6.06% GDP growth: Assumed sectoral rates	Value 1980	% structure 1980
Agriculture, forestry and fishing	22.0	18.2	15.9	37.0	2.1	45.5	12.6	3.7	53.2	12.7
Mining	8.6	7.3	7.3	17.0	3.5	34.0	6.6	4.5	26.4	6.3
Manufacturing	16.6	18.6	20.8	48.5	6.0	86.9	24.0	7.8	102.8	24.6
Services[1]	52.8	55.9	56.0	130.5	4.6	205.4	56.8	6.0	234.9	56.3
TOTAL GDP	100.0	100.0	100.0	233.0	4.5	361.8	100.0	6.0	41[illegible].3	100.0

1. See discussion of Services category in text, page 174 for further breakdown of projection.

Source: IIEP.

especially important where economies of scale require markets larger than those of member countries taken separately.

The Peruvian Plan 1971-75, calls for a higher rate of industrial expansion than we have indicated in our ten-year projections.[1] The Plan's cumulative annual growth rate of 12.4 per cent for the industry sector, which was expected to raise its share of G. D. P. from about 21 per cent to 26 per cent by 1975, has been scaled down somewhat in the Biennial Plan of 1973-74. The projections there for 1971-74 average just over 8 per cent. Our projections, though more conservative, are not necessarily inconsistent with the more modest biennial figures. Some of the recent growth in manufacturing has been related to recovery from an earlier period of recession. A ten-year projection must make allowance for some years of slackening growth of activity, as it must take a longer period into account; we have made allowance for more planning and preparation time, since one of the most significant features of the Plan is a substantial increase in the finance, development, and participation of government in this sector.

C. MINING

We have noted that the mining sector is vital to the present and potential foreign trade position of the country. Although growth was more modest in the sixties than in other sectors, vast areas of the country can be presumed to contain mineral deposits which are neither exploited nor fully prospected. Our projections put this sector at a growth rate somewhere between that just barely exceeding the last decade to one considerably stronger. The latter would require a combination of favourable factors, at least toward the latter part of the decade including good world prices, substantial investment, and new output, and also, in all likelihood, some form of substantial foreign capital. Public investment is expected to increase substantially in this sector. This investment will add to copper output, to refining output, and if new exploration and development is successful, to possible new oil production. Recent oil production in northern offshore fields has been insufficient to match domestic needs. The major constraints in this sector are thought to be investment capital needs, speed of development of public organizational capabilities, and world price possibilities.

D. GROSS CAPITAL FORMATION

As we have seen, there has been some tendency for capital formation to fall relative to G. D. P. in the sixties. Although we have offered a number of explanations for this above (see pp. 141-145), it is necessary to assume a resumption of relatively stronger increases in capital if growth rates are to be continued. New export production in the mining industries, agricultural development, and new manufacturing industries, especially as they are developed increasingly towards the production of large-scale export and intermediate and capital-goods production, will all involve new relatively capital-intensive production. After considering the needs of the sub-sectors, we have nonetheless chosen what we consider a minimal need for new capital for our projections, one which works out to an incremental gross capital-output ratio of 2. 5. This is possible with a combination of new intensive needs such as just described and fuller utilization in other areas, but it should be remembered that our final results, which indicate capital growth at 12. 1 per cent and 15. 1 per cent per annum according to the two assumptions, represent minimal needs and ones which could turn out to be insufficient.

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[1] Perú, Presidencia de la República, Plan nacional de desarrollo para 1971-75, Vol. 1, Plan global, p. 128.

E. PROJECTION OF FOREIGN TRADE SECTOR

Imports have been projected by breaking them into their components, analyzing the needs respectively for intermediate and primary goods inputs, capital goods, and consumption goods. Input imports are expected to grow at about the vigorous rate of the manufacturing sector itself, in spite of expected continued growth in import-substituting capacity. This would be partly a function of the strong shift in structure assumed within the manufacturing sector. We have also projected capital goods imports at the rate of increase in capital formation.

The share of consumption imports is expected to continue to decrease. But we have projected a growth rate (7. 5 per cent and 9 per cent at the two assumptions) which implies a larger ratio of consumption imports to total consumption than was true at the end of the decade. Our assumption is that these imports would return to the ratio nearer the average for the middle of the previous decade. Consumption imports would rise as a function of continuing urbanization, broader ranges of middle incomes, and greater participation in regionally integrated markets. Trade projections are shown in Table 92.

Table 92. Trends of foreign trade (S/'000, 000, 000 1970)

	1970	%	1980(I)	%	1980(II)	%
Imports	38. 0	100. 0	88. 0	100. 0	108. 9	100. 0
Primary + intermediate goods	18. 7	49. 3	33. 5	38. 1	39. 6	36. 4
Capital goods	13. 8	36. 3	43. 2	49. 1	56. 3	51. 7
Consumption goods	5. 5	14. 4	11. 3	12. 8	13. 0	11. 9
Exports	46. 0	100. 0	71. 4	100. 0	82. 3	100. 0

Source: IIEP.

After looking at major export prospects, the outlook for which has already been covered in the discussion of the agriculture and mining sectors, it appears that the long-run prospects are best put at the assumed growth rate of G. D. P. There seems little basis for departing from the strongly exhibited close relationship between exports and G. D. P., particularly for long-range projections. In the short run, price prospects for individual commodities will be significant, but in the long run, export performance for a well-diversified trade-oriented economy such as Peru's can be assumed to match the utilization of economic potential generally. It should be recalled that the difference in the two G. D. P. growth rates being examined here will depend considerably on the extent to which major new export capacity can be developed.

F. PRIVATE AND PUBLIC CONSUMPTION

At this point it is possible to present Table 93[1], which shows 1970 and projected sources and uses of G. D. P. at market prices. It reflects items already determined and discussed, such as the projected G. D. P., exports and imports of goods and non-factor services, and Gross Domestic Investment, although the latter has not yet been allocated between public and private uses. Total consumption is obtained as a residual amount in the expression:

Consumption = G. D. P. - Export Surplus - Gross Domestic Investment, or the same data in the supply-uses form:

Supply of Resources = Uses of Resources
G. D. P. + Imports = Consumption + Investment + Exports

We thus solve for consumption as a residual, break it into public and private components, and test the feasibility of the results. At the lower G. D. P. growth assumption, we project that government current expenditures will grow at 5 per cent, slightly above the rate of growth of G. D. P.; but this is a fairly restricted and conservative growth estimate for the administration sector, especially if government is to play a more active role in economic affairs. The implied residual

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[1] The data for 1970 which form the basis of the projections are not identical to those presented in the complete accounts, for example in Tables I and II, Appendix I. Believing that some features of the experience of 1970 were not typical and provided a less satisfactory base for projections we present 'normalized' base year data with some changes such as more average figures for change in stocks, components converted to add to G. D. P. instead of G. N. P., exports and imports adjusted to exclude factor payments, and the factor payments allowance increased because preliminary data are believed to be too small to be typical. We have already mentioned the very high capital depreciation allowance which was indicated in data available to us at the time of this writing.

Table 93. Projection of sources and uses G. D. P.
(S/. '000, 000, 000 1970)

	1970	%	1980(I)	%	1980(II)	%
Consumption	195	83.7	284.0	78.5	321.7	77.1
Private	173	74.3	248.2	68.6	284.1	68.1
Government	22	9.4	35.8	9.9	37.6	9.0
Gross Domestic Investment	30	12.9	94.4	26.1	122.2	29.3
Enterprises fixed[1]	23	9.9	80.4	22.2	105.6	25.3
Public fixed	5	2.1	7.8	2.2	8.5	2.0
Change of stocks	2	0.9	6.2	1.7	8.1	1.9
Exports of goods + non-factor services	46	19.7	71.4	19.7	82.3	19.7
Imports of goods + non-factor services	38	16.3	88.0	24.3	108.9	26.1
Net exports of goods + non-factor services	8	3.4	-16.6	-4.6	-26.6	-6.4
Gross Domestic Product at market prices	233	100.0	361.8	100.0	417.3	100.0
Net factor payments abroad	5	2.1	9.0	2.5	9.4	2.3
Gross National Product	228	97.9	352.8	97.5	407.9	97.7

1. Includes private and public enterprises.

Source: IIEP projections.

private consumption would in this case be a growth rate of 3.7 per cent, a very modest per capita improvement, given the fact that the population has been growing for a significant period at or above 3 per cent. At the lower G. D. P. growth rate, there would nonetheless be a reduction of share of consumption in G. D. P. of somewhat more than 5 percentage points over the decade, from 74.3 per cent to 68.6 per cent. At the higher assumed growth rate for G. D. P., we project government expenditure at 5.5 per cent, which would imply a private consumption rate growing at 5.1 per cent - an almost two per cent per capita improvement. From 1960 to 1969 personal consumption grew at 6.7 per cent per annum in real terms, more than twice the population growth rate. Thus even though it is essential to allow a relatively higher consumption rate if the economy is expected to move along at a higher growth rate overall, our higher growth assumption for G. D. P. nevertheless implies significantly slower consumption growth per capita than was true in the past decade.

We turn now to the allocation of investment between the enterprise sector, which is assumed to include the important and growing category of decentralized government agencies, and the private sector. We use an assumption of approximately constant capital-expenditure ratios for government.

Summing up the picture which is seen from the assumptions so far made, Table 93 shows the approximate structure of the economy under the two assumptions. Proportionally, there is a significant drop in consumption, especially in the private sector. Under the low growth assumption, this drop results in a barely improving per capita performance; with the high growth performance, the result is a rate of improvement which is much better, but is still modest and much less than that achieved in the sixties. Investment, even at the relatively modest 2.5 incremental capital output ratio which we have used, grows relatively rapidly, re-establishing ratios of investment to G. D. P. that were characteristic of earlier periods of growth and more in line with experience in other countries where growth is sustained over long periods. Nonetheless there is a strong need for net resources from abroad, as reflected in import surpluses at the end of the decade that range from 4.6 per cent to 6.4 per cent of G. D. P. It would appear that only very robust real growth of export capabilities plus very favourable international price trends could reduce the implied net import needs appreciably. We can now turn to the savings requirements of our analysis.

G. TRENDS IN TOTAL SAVING AND BALANCE OF PAYMENTS

In Table 94 trends of national saving are seen. These are implicit in the levels of G. D. P. and consumption already projected. In the case of both growth assumptions, there is a strong resurgence of domestic levels of savings, up as a percentage of G. D. P. from relatively lower levels at the end of the sixties to an assumed level equivalent to that of the highest levels achieved in that decade. (See Table 79 for comparison.) Gross national saving is estimated by allowing for growth of current transfers. These are projected to increase during the seventies, reflecting the continuing growth of foreign indebtedness, but at a rate slower than in the late sixties. Given our earlier estimates of Gross Capital Formation, we note that the assumptions as a whole imply a strong capital inflow from abroad. In short, in spite of substantial increases in domestic saving, our growth assumptions imply the need for large importation of capital, particularly at the higher G. D. P. growth rate.

The trends in the major categories of balance of payments are shown

Table 94. Trends of total saving (S/. '000,000,000 1970)

	1970	1980(I)	1980(II)
G. D. P.	233. 0	361. 8	417. 3
- consumption, public and private	195. 0	284. 0	321. 7
= Gross Internal Saving	38. 0	77. 8	95. 6
(% of G. D. P.)	(16. 3%)	(21. 5%)	(22. 9%)
- net factor income to abroad	5. 0	9. 0	9. 4
+ current transfers from abroad	0. 5	0. 6	0. 6
= Gross National Saving	33. 5	69. 4	86. 8
(% of G. N. P.)	(14. 7%)	(19. 7%)	(21. 3%)
+ net lending + capital transfers from abroad, including change in reserves	-3. 5	25. 0	35. 4
= Gross Capital Formation	30. 0	94. 4	122. 2

Source: IIEP projections.

in Table 95. They summarize these same features of implied import surplus - the need to make service payments on indebtedness, and the need for large net long-term financial resources. Although the rate of foreign borrowing is assumed to be high, a number of the important growth projects, particularly in the export sector, can be assumed to attract foreign capital. Under our high growth assumption, with the export sector growing at 6. 5 per cent per annum, it is assumed that the output growth in the mining sector particularly would have attracted an 'accelerator' input of foreign capital funds. The high rate of net capital inflows would not appear unusual in a fast-growing open economy such as Peru's at its present stage of development, if organizational and financing tasks can be successfully managed.

H. CURRENT RECEIPTS AND EXPENDITURES OF GOVERNMENT

One of the most important aims of our economic study is to relate the potential performance of the economy to the provision of finance for education. Projection of implied government resources is an important part of that relationship. But since education is significantly financed through private means as well, our interest here in the future course of public finance will not tell the entire story. Our examination of trends within the educational sector itself will help to determine the relative participation of public finance in the future. For the moment we are concerned with trends for the entire government sector, to determine the probable and feasible expectations for all public resources which are implicit in our projections.

Table 95. Trends of balance of payments (S/.'000,000 1970)

	1970	1980(I)	1980(II)
1. Imports of goods + non-factor services	38.0	88.0	108.9
2. Exports of goods + non-factor services	46.0	71.4	82.3
3. Net imports (1. - 2.)	-8.0	16.6	26.6
4. + net factor income paid abroad	5.0	9.0	9.4
5. - net current transfers from abroad	0.5	0.6	0.6
6. = net lending + transfers from abroad	-3.5	25.0	35.4

Source: IIEP projections.

Table 96. Projections of current receipts and expenditures of consolidated government accounts (S/.'000,000 1970)

	1970	1980(I)	1980(II)
Current receipts	43.8	76.7	91.9
Taxes on enterprise	8.5	22.6	26.7
Non-tax receipts from enterprises	2.2		
Receipts from persons	10.0	17.0	21.2
Indirect taxes	23.1	37.1	44.0
Import duties	8.2	16.7	20.7
Other	14.9	20.4	23.3
Current expenditures	39.1	66.0	72.6
Consumption	22.0	35.8	37.6
Current transfers	17.1	30.2	35.0
Subsidies to public and private enterprise	4.6	4.6	4.6
Pensions and social security	10.3	22.1	26.7
To exterior	0.1	0.1	0.1
Interest on debt	2.1	3.4	3.6
Saving of government	4.7	10.7	19.3
Current receipts as % of GDP	18.8%	21.2%	22.0%

Source: IIEP.

In the earlier economic section we have examined receipts and expenditures of central government (Tables 80-83). In Tables III-V, Appendix I, the accounts of local government and a consolidated account of public receipts during the sixties is given. Reflected in these accounts is the important fact that local government taxation and spending activity is only 4 to 5 per cent the level of all government. The relative reliance on government functions at the centre is strongly embedded and goes deeply into the past development of Peruvian political institutions. Thus our projections of all government activity are dominated by projections of what takes place in the central government.

Table 96 shows projections of current receipts and expenditures for all levels of government. After studying major tax relationships of the sixties, taxes on enterprises have been projected at about their average percentage of enterprise output during that decade. Private taxable enterprise may fall as a share of industrial output with major government participation in this sphere, but this fall may be offset by more effective collection and possible new elements of taxation, maintaining a significant tax elasticity on the private portion of the sector. Our projection of personal income taxes follows the growth rates expected in the manufacturing sector. This projection seems reasonable, given the already well-established personal tax base and a substantial existing social security taxation system.

Import duties have been related to our import projections at the high recent collection rates that have been achieved. Other indirect taxes have been related to projected consumption growth. Although consumption takes place through a broad range from the urban to the subsistence sectors of the economy, non-duty indirect taxation has been a fairly stable percentage of total consumption and we expect the same relationship to continue. As a result, total current receipts of government are projected to rise at 5. 5 per cent and 7. 7 per cent per annum, significantly ahead of the assumed growth rates for the economy, implying a tax elasticity greater than one for the entire tax system. As a comparison with Table 81 shows, our projections imply government receipts at record proportions of G. D. P.

On the expenditure side, we have already projected government consumption growing at 5. 0 per cent and 5. 5 per cent under the two assumptions. It remains to consider transfers. We have assumed subsidies and current transfers to public enterprises to remain unchanged, preferring to account for increased public resources in the savings category rather than attempting to foresee the degree to which resources would be transferred on current account to the many developing decentralized public agencies. The social security component in pensions has been projected at the rate of growth of the manufacturing sector, and that together with an allowance for increased interest on debt associated with a modest resort to internal and external borrowing, accounts for the rise in current transfers. Under these assumptions, current savings of government grow at 8. 5 per cent and 15 per cent respectively, and become a major source of saving. It is clear that this level of public saving will be vitally necessary to finance the total levels of investment implied in the projections. Thus we may look on the projected allowances for government consumption as minima or as constraints. At least they are seen as public funds with high opportunity value, that is, as savings necessary to the total finance of growth. We have not tried to project government expenditures by function at this stage, preferring first to analyze the educational system, and to see its past and projected levels and sources of funds in greater detail.

I. THE PERUVIAN PLAN 1971-75

The Peruvian Plan[1] which was published in May 1971 calls for significantly higher growth rates than we project on a ten-year basis. Gross Domestic Product is expected to grow at 7.5 per cent per annum, a rate which is reduced considerably in later biennial plans[2] to about 6.3 per cent for the period 1971-74. The Plan allows for a rise in consumption of 6 per cent per annum, double that of the rate of population increase.

Gross Domestic Investment is expected to rise at an average of 18.9 per cent per annum as the result of very heavy impetus from government saving (including the growing use of surpluses of public enterprises) and a re-establishment of private investment. Private investment was expected to come back slowly in 1971-72 after its strong retraction in the late sixties, and then accelerate in magnitude in the later years of the Plan, 1973-75. The average projected rates of growth per annum are 9.6 per cent for the private sector, and no less than 32 per cent for public sector investment. This investment rate is expected to restore the ratio of Gross Domestic Investment to Gross Domestic Product from just over 12 per cent to over 21 per cent by 1975. The rise of public investment is described in the Plan as 'the most dynamic factor in the national development'. There is to be a relative shift from public investment in infrastructure toward greater emphasis on the more directively productive activities of mining and manufacturing.

The Plan sees an integral link between the structural reforms in agriculture, education, and industrial organization and control, and the goal of higher economic growth rates. The proposed growth rates for 1971-75 are not merely an economic background for the reform programmes, but are considered to be directly dependent upon them; it is stated that long-run expansion would not be possible without them. Whether or not the reforms can have sufficient positive impact by 1975 to bring about the ambitious growth rates envisaged, the reforms must be taken into account in viewing the changing economic setting of the country for the longer run.

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[1] Presidencia de la República, Perú, Plan Nacional de Desarrollo para 1971-75, Vol. 1, Plan Global.

[2] Instituto Nacional de Planificación, Perú, Plan Bienal para 1973-74, Proyecto, Lima, April 1973, p. 30.

The aim of the agrarian reform, which is expected to be generally completed by mid-decade, is the transfer of 24 822 rural large-holding properties involving about 11 000 000 hectares to 267 240 small-scale farmer beneficiaries. One million cattle, 3.6 million sheep, and one-half million llamas will be transferred. The payments for the acquisition programme are in cash to a limited extent, largely in bonds, with a major attempt to channel the cash payments into the industrial sector and into food processing industries. The reform will also include major programmes of rural educational assistance in reform rural settlement units, state-fostered technical assistance and credit assistance, and seed improvement programmes. Development of rural co-operatives to replace the large private-holding farming unit will be encouraged as well as commercialization of agriculture to meet domestic foodstuffs requirements. Basic studies are to be made of the national food market, to establish quality standards to promote higher value production, and to determine the need for and location of milk and meat processing and food storage facilities. An overall objective is to decentralize the national food market and make it more effective by bringing regional supply and demand forces closer together. Export markets for non-traditional foods are to be encouraged in areas such as vegetables, fruits, tobacco, and black tea, in addition to the traditional exports of coffee, sugar and cotton.

Irrigation and water development is an important part of agricultural expansion, since naturally-watered lands are scarce in the populated and relatively accessible areas of the country. Studies for the five-year period will determine how to support the cultivation and irrigation of one million new hectares of production. The largest projects to be undertaken in mid-term are those of Tinajones, Chi-Piura, Linea Global, and Majes-Siguas, involving major dam construction, river diversion, canal construction, and irrigation works. The pace of this work as foreseen in the plan will depend upon whether adequate external finance can be obtained. Other major areas of activity in the sector deal with forestry evaluation and development schemes in remote areas, and reforestation projects.

Although it is not possible to foresee the exact magnitude of private investment in agriculture, given the large and increasing number of production units, the Plan calls for the major categories of public investment in agriculture (not including special programmes for earthquake relief), as shown on the next page.

These totals represent the summing-up of a large number of specific projects across the whole range of agricultural activities. The importance of water development in the total is apparent. There is also a major emphasis on making the marketing system work better, with warehousing, processing, and credit projects receiving attention.

Mining policy, following the recent Law Decree of the Mining Industry, is intended to tie the development of mineral resources closer to the development of basic industry - the later stage processing units that utilize the mineral products. The emphasis of public ownership and controlling interest in new mining ventures is intended.

	(in S/. '000,000,000 1970)
Agrarian reform and rural settlement	1.5
Promotion (of certain deficit crops)	2.2
Commercialization	1.1
Research	0.3
Forestry	0.6
Water development and irrigation	29.9
Miscellaneous	1.5
	37.2

Source: Presidencia de la República, Perú, Plan Nacional de Desarrollo para 1971-75, Vol. 1, Plan Global, p. 114.

to enhance the 'backward and forward linkages' of these activities and to end the 'external dependence' inherent in simply acting as an exporter of raw materials. State enterprises and mixed enterprises according to the Plan will thus emphasize not only all stages of exploitation of ores, but metallurgy, refining, and 'commercialization'. In the period 1971-75, public investment is expected to total 21 thousand million 1970 Soles, more than two-thirds of the amount cited for agriculture. Although the Plan recognizes that much of the new investment activity will not pay off before the later years of the decade, it nonetheless postulates an annual rate of growth for the mining sector of 5.7 per cent during the Plan period to 1975. This rate exceeds that which we have utilized in our projections. We have assumed that without major new output capacity the sector cannot grow substantially before the last half of the decade. In the Biennial 1973-74 Plan which accounts for the experience already achieved in 1971-72 and projects it through 1974, the mining sector growth averages about 3.2 per cent per annum (1971-74). Long-run projections involve the hazardous task of projecting world prices, in addition to domestic production, but recent trends appear favourable.

It is expected that in the long run the growing state participation in mining will stem the outflow of royalty and profit payments, and return larger revenues to the state for development finance. In the meantime, the Plan calls for substantial external finance of new mining activity, although less of it will be in the form of equity or direct investment. Increasing reliance is being placed on joint venture mining contracts in which a state company puts up rights to the deposits in return for a 51 per cent interest in the joint company. The foreign interests then put up all of the cash necessary to develop the product, in return for either fixed proportions of the output for a certain time period or, in some instances, without necessary prior specification of the proportion (a recent agreement between Mineroperu and a Romanian State overseas mining company is described as a model for joint venture contracts). Petroperu has also explored the technique of exchanging future delivery of oil for substantial cash loans for pipeline development, as in the case of a recent preliminary agreement signed with Japanese interests.[1]

In the area of manufacturing, the Plan calls for a number of reform objectives that go beyond the very high growth rates expected for the industrial sector. The state will play an increasing role in basic industries in order to bring important decision-making into the national arena and reduce external dependence. There is to be an emphasis on regional decentralization, an aggressive development of technologies which will maximize the utilization of Peruvian resources rather than imported ones, the more widespread establishment of quality standards, and an active participation in the process of Latin American integration. The Plan recognizes that the heavy emphasis on basic industry will limit somewhat the extent to which the sector can match product growth with employment growth, since in the middle term much new industry will be capital-intensive. There is to be development of ferrous metal-using industries in such areas as sheet steel, castings, tubes, bars, wire, and construction steel, including new partially-processed steel products for export. These activities are to improve upon past exports of basic and refined ores. Similar extensions of economic activity are expected in the non-ferrous industries of copper, lead and zinc.

Fabrication of metal-using products is to be extended in such areas as agricultural machinery, motor and automotive body parts, machinery and machine tools, electrical and instrument products, and mining machinery. Petrochemical development is to expand the output of fertilizers, polyethylene, PVC, polystyrene, resins, and related products. There will also be an emphasis on canning of fruits and vegetables, and the development of processing of edible fats and oils which are in national deficit. Food processing will also require enlarged milling and packaging facilities, and hydrogenation and substantial refrigeration capacities. Paper and paper products will expand the domestic capacity using bagrasse pulp, not only satisfying domestic needs for a number of types of paper, but creating export capacity. Production of both paper and cement will be more than 50 per cent controlled by the state at the end of the Plan period.

In spite of the substantially increased public participation in industrial investment, particularly in basic industries, about 70 per cent of the large investment (99 thousand million 1970 Soles) foreseen in the Plan will come from private investors.

The government's growing influence over the industrial sector is supposed to achieve certain broader economic goals. It is intended to bring a greater degree of balance and articulation between different industrial activities. The large scale necessary to achieve economies sufficient to match the world market is to be sought in certain product areas. The state's intervention is to assure the sector's development 'according to the necessities of society', and to assure the participation of workers in the industrial decision-making process. The creation of an Industrial Community is envisaged, in which the fruits of industrial activity are to accrue to the national majority rather than to 'the members of privileged groups'. There will be an attempt to remove the traditional 'boss-worker' concept replacing it by a 'concept of the worker'. The precise instruments by which industrial labour organization will change are yet to be worked out.

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[1] See the Peruvian Times, 20 April 1973, 'New model for joint venture contracts' and 'Petroperu expecting US$300 million Japanese Loan'. A similar petroleum arrangement financing an oil pipeline from the eastern areas is in force in neighbouring Ecuador.

It is recognized that in small-scale industry and artisan trades there is a greater scope for employment growth to match product growth. These areas get attention in the Plan both from technical and financial assistance programmes.

To summarize, the government's intervention in the industrial sector is intended to promote large-scale and basic industries, to foster and encourage linkages between raw material and fabrication industries that are vertically related, to encourage regional decentralization of an industrialization which has so far clung too close to a few urban locations, and to obtain larger proportions of profit for public reinvestment.

The regional development aspect of the plan consists of an additional but different specification of priorities in geographic rather than industrial or sectoral terms. The country is demarcated into four special geographic zones, which account together for a large proportion of the entire country, and are called collectively Zones of Concentrated Action (Zonas de Acción Concentrada). First, the Zones of Comparative Advantage (Zonas de Ventajas Comparativas) are designated as areas with a combination of readily developable natural resources such as mining, fishing or intensive agriculture, and with reasonably well-developed infrastructural investments. These zones are thus well placed for the most extensive development of basic natural-resource related industries. These areas are all coastal but well removed from the Lima-Callao industrial area; they are in the extreme north, middle south and extreme south of the country. The goal would be rapid expansion in these areas against relatively favourable and already existing conditions of complementary industry and infrastructure to emphasize a high return and an early return on this part of total national investment.

Second, Zones of High Relative Development (Zonas de Alto Desarrollo Relativo) are designated as areas that are already experiencing a degree of urbanization (with the exception of Lima). They have a good agricultural base for trade between the urban and agricultural sectors, an infrastructure of transport capability, and the provision of services which will permit them to become alternative areas to Lima for continuing urban migration. Such zones are the large coastal department of Lima, with the exception of the Province which holds the city of Lima itself, the northern coastal area between Chiclayo and Trujillo, the southern areas of Arequipa and Tachna, and the central

Sierra valley of the Mantaro River. The impetus for industrial expansion will come primarily from private investment, but the state will attempt to provide sufficient infrastructural investment and other inducements to make them competitive for investment and work sites with the present Lima area. These zones are surrounded by good agricultural land, and are prime targets for irrigation improvements and other agricultural investment, so that surrounding areas of rising agricultural income would provide 'demand centres' for the growing urban products. Their industrial base is more oriented toward intra-regional trade and it is thus different from that of the zones of comparative advantage discussed above.

Third, Zones of Population Saturation (Zonas de Saturación Poblacional) in the mountain ranges are characterized by large concentrations of population relative to the natural resource base, particularly cultivable soil. Such areas are in the south-eastern departments of Cuzco, Puno and in Ayacucho, and in the mountainous provinces of Ancash and Cajamarca in the north-central and northern areas. They have the lowest standard of living and have been the most cut-off from public services. They will receive some priority in the assistance phases of the agrarian reform. It is thought that even primitive agriculture is amenable to improved techniques and the provision of complementary economic infrastructure in these areas. Other artisanal activities and such other activities as promotion of tourism potential of some of the most scenic areas will be stressed. Self-help projects to build capital at the local level will also be fostered under the reform.

Lastly, the so-called Zones of Economic Frontier (Zonas de Frontera Económica) are in Eastern Peru in the high eastern slopes and the lower elevation expanse toward the Amazon basin. Much of this area, although far from the population concentration and intra-regional trade of the population centres, is rich in natural resources. Cattle-raising and oil production (to be exploited by pipeline) are two strong possibilities for future growth. To the extent that these areas are promoted by 'colonization' there will be an emphasis on economic investment complementary to the development of the indigenous natural resources. The Plan states that one of the difficulties with past colonization schemes has been the lack of provision of complementary and economic support activities.

Thus the Plan calls for a series of actions and sets a range of projects and priorities that, whether or not they can be accomplished within the Plan period to 1975, do show the outlines of intended national influence over the development process.

J. SUMMARY

Our own projection model has certain characteristics which can now be summarized. Two growth rates for G.D.P. have been chosen, ones which could be characterized as possible minimum and maximum rates. Next, using what might be thought as the minimum necessary estimates for capital formation to support such income growth, we find substantial need to develop new export capacity; we also find a high rate of growth of imports that implies continued high levels of long-term international borrowing. Even where we have made restrictive assumptions concerning the growth of consumption (justifiably less so in the case of the higher growth rate where more 'volunteerism' may be called upon to effect the more rapid structural change), domestic savings are expected to rise to high levels, near record proportions. With a tax elasticity greater than one, and only moderate growth of government current consumption, levels of government saving are seen to be substantially increased. The increased public savings are a necessary component of total finance. Total domestic saving and the government share within it are perhaps just able to be supported at projected rates without resort to excessive government borrowing.

Several results which bear on future finance of programmes such as education can be deduced from this exercise. First, we doubt that a ten-year projection, which must allow for the contingencies of some bad years as well as good ones, should exceed the higher assumption made here. The requirements of higher rates of growth place upon domestic capability to finance capital formation or to attract foreign lending would appear difficult to attain. Second, within the range of our assumptions there is an important difference between what can be achieved at the higher as opposed to the lower assumption. This is partly a question of the differing amounts of real resources at the disposal of government for its consumption and transfer. But it is also a question of the strength of the entire economy, and of the trends in income per capita which determine individuals' ability to demand and to provide resources for education directly and through non-governmental channels. Ultimately, in a system such as Peru's for the finance of education, the question of public expenditure on education turns as much on the allocation of resources within the public budget as it does on aggregate public resources available. This allocation is especially important where publicly financed current expenditure and particularly capital expenditures have remained as small proportionally (and even diminished) as has been the case in total public expenditures during the later sixties. Given the importance of this allocation question, and the unknown final level of priorities for the support of education as compared to other expenditures, it makes a significant difference which of our growth assumptions is to obtain. The ability to support education, or to follow a policy reasserting significantly greater relative expenditure on education, would be demonstrably easier under the conditions of the higher growth assumption. We must look again at these relationships after examining the future of the educational system in detail.

VI. The educational system in prospect until 1980

A. INTRODUCTION

A major purpose of this study, and the other country studies in this series, is to analyze the probable need for new financing for education by 1980, the end of the United Nations' Second Development Decade. In spite of the past world-wide trends in developing countries, which have produced a vast expansion of enrolments and expenditures on education, there remains much unfinished work in attaining such widely sought goals as universal first-level education (and the eradication of juvenile illiteracy), the adequate training of manpower, skilled in accordance with local needs, and the education of adults for a more effective participation in rapidly changing social and economic life.

Some questions may be asked: can the growth rates in the creation and deployment of educational resources of the recent past be sustained, let alone increase in the Second Decade? How is the financing of these unmet needs itself related to the capacities of the development process? We have already tested some possible growth rates for the Peruvian economy which suggest levels of funds available to government for meeting educational and competing social and economic development goals. Now we must turn to projections of the educational system, based in the near term on the 1971-75 Educational Sectoral Plan, and in the longer term on the full implementation by 1980 of the educational reform, and examine the implication of these upon future recurrent and capital costs. The aim is not merely to arrive at an estimate of 1980 amounts. Making exact predictions of the future is as hazardous in the planning of education as it is in anything else. The purpose is rather to analyze the probable effect of explicitly stated assumptions concerning the various factors which will ultimately control future costs and future possibilities for providing more education. Many of these factors are policy variables (such as teachers' salaries) and their control may be a difficult matter. Others may be more in the nature of given facts (such as population growth), at least in the short run. The detailed work of planning and the difficult task of making choices among alternatives may thus be aided by analyzing the role of key variables over a period of many years.

With Peru's embarkation on a major reform, it seems necessary to break the task of projection into two parts. One part might be termed aggregative projection, and the other part the projection of probable qualitative changes, or the costing of the reform process itself. Aggregative projections deal with the key educational planning variables which together add up to total costs; they operate even in the absence of changes deliberately sought in the organization and method of providing education. Population growth and its history, which determines the present and future age distribution, is an example. Given population, there are factors governing enrolment ratios - the proportions of school-age and older-age persons that can be expected to enrol. These are partly a function of recruitment and provision of facilities for the existing numbers; but enrolment rates are also affected by the rate of repetition of grades, the rate of drop-out, and the rate of re-entry after drop-out. Enrolment rates at any time are also a function of the dynamics (the development over time) of the process of catching up by delivering schooling deliberately to those over normal age. The current rate of schooling revealed as an apparent enrolment ratio is thus dependent on (i) the enrolment rates of the normal-age pupils and students, and (ii) the amount of over-age enrolment, which in turn is a function of how fast and how long the educational system has been growing in the recent past relative to the population. We can observe in a summary way in Table VIII, Appendix II, this picture for Peru, with very large proportions of pupils over the normally defined age. These over-age enrolments can be expected to fall in the future, however, releasing resources for the normal-aged group.

Education as we know it, and as it is likely to remain for the foreseeable future, is a highly labour-intensive service, and salary costs, particularly in Peru, are a very large proportion of total costs. Even with the current interest in different educational technologies, this situation is not apt to change radically in the time period of our analysis. Something over 90 per cent of educational costs, and more likely over 95 per cent at lower grade levels, will probably continue to be salary costs. The future course of salaries is thus the key cost variable. Another variable which figures importantly in aggregative projections is the load factor, represented by the pupil/teacher ratio. Adding or subtracting one pupil per teacher (if increases in load occur in similar amount against existing proportions of administrative personnel), can affect salary unit costs by the order of 3 per cent at the primary level, 4-5 per cent at the secondary level, and about 10 per cent at the university level.

The other major part of projecting future educational costs, that dealing with qualitative change, is associated with the new educational reform. As we have seen in detail, the reform is fundamentally concerned with a modification of the goals of education, a change in basic philosophy which when achieved will require significant shifts in teaching methods, curriculum, and even the basic attitudes toward education of teachers and the community at large. The reform provides for some tangible shifts in the structure and local administration of schooling, which we analyze and try to take into account. Even though for one type of partial analysis, projections can be carried out on the basis of past cost determinants, it is important to recognize the difficulties which are involved in extrapolating from past experience if costs are fundamentally altered by the programme of reform. New cost experience can be built up and incorporated in projections only as the experience is carefully combined from many pilot units of newly established or newly reformed schools, and as new data become available, particularly on the costs of geographic dispersion of new schools. It will be our objective in a later part of this chapter to isolate some of the key cost factors that may be associated with the qualitative aspects of educational reform. In the meantime, however, a large part of the growth of future costs of education is still rooted in the key quantitative variables from the past decade. Thus we turn first to these basic quantitative variables and analyze what they may predict for the course of educational costs up to 1980.

B. PROJECTED POPULATION TRENDS

In this section we present population projections based upon several assumptions as a background against which to test the importance of population growth as a variable affecting planning. Our population projections will be used to test the enrolment ratios that are being put forward grade-by-grade in the projections of the Education Sector Plan presented in the next section.

The last major census of population was taken in 1961, so 'projection' must begin from that date, and from any corrections found desirable for data compiled as of that date.[1] Thus the older age-groups in the population are reasonably surely accounted for, but those who will enter the school system in the seventies are a population estimated to have been born in the late sixties. Migration is also a powerful influence on an accurate regional count, and it is to be expected that educational planning will be a major beneficiary of the up-to-date census.

Table 97 shows one series of population projections covering the period 1965-80 by normal school ages, and grouped by school level. These projections carry the 1962 adjusted population count through to 1967 on the basis of given trends of that period, and from 1967 onward make two alternative assumptions. The first (data shown in parentheses) projects fertility rates as they were in the mid-sixties, and a further decline in mortality in correspondence with fairly widely

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[1] A census for the year 1972 has recently been taken, but the complete results are not yet published.

Age	1965	1970	Series A 1975	Series B 1975	Series A 1980	Series B 1980		Annual growth rate
4	351	435	(507)	491	(606)	555		
5	342	421	(488)	477	(583)	540		
6	330	409	(469)	464	(562)	526		
7	319	397		451	(541)	513		
8	308	366		(439)	(521)	499		
9	298	342		427	(502)	486		
10	289	335		415	(484)	474		
11	281	325		403	(466)	461		
12	273	315		392		449		
13	265	305		363		437		
14	258	296		338		425		
15	251	287		332		413		
16	244	278		321		401		
17	236	270		311		389		
18	228	262		301		360		
19	221	254		291		335		
20	214	247		282		329		
21	207	239		274		318		
			Age-groups					
5-9	1 597	1 934	(2 273)	2 258	(2 710)	2 565		
10-14	1 367	1 575		1 911	(2 261)	2 246		
15-19	1 180	1 351		1 555		1 898		
20-24	1 004	1 158		1 328		1 539		
			Indices					
5-9	82.6	100	(117.5)	116.8	(140.1)	132.6	(3.4)	2.9 %
10-14	86.8	100		121.3	(143.6)	142.6	(3.7)	3.6 %
15-19	87.3	100		115.1		140.5		3.5 %
20-24	86.7	100		114.7		132.9		2.9 %

Source: U.S. Bureau of the Census, Population of Peru, estimates and projections: 1962 to 2002, Demographic Report for Foreign Countries, Series P-96, No. 4, U.S. G.P.O., Washington D.C., 1971; data from Table 1, p. 45.

		Series A	Series B	Series A	Series B		
1965	1970	1975	1975	1980	1980		
		(507)		(606)			
351	435		491		555		
		(488)		(583)			
342	421		477		540		
		(469)		(562)			
330	409		464		526		
				(541)			
319	397		451		513		
				(521)			
308	366		(439)		499		
				(502)			
298	342		427		486		
				(484)			
289	335		415		474		
				(466)			
281	325		403		461		
273	315		392		449		
265	305		363		437		
258	296		338		425		
251	287		332		417		
244	278		321		401		
236	270		311		389		
228	262		301		360		
221	254		291		335		
214	247		282		329		
207	239		274		318		
		Age-groups					
		(2 273)		(2 710)			
1 597	1 934		2 258		2 565		
				(2 261)			
1 367	1 575		1 911		2 246		
1 180	1 351		1 555		1 898		
1 004	1 158		1 328		1 539		
		Indices					Annual growth rate
		(117.5)		(140.1)		(3.4)	
82.6	100		116.8		132.6		2.9 %
				(143.6)		(3.7)	
86.8	100		121.3		142.6		3.6 %
87.3	100		115.1		140.5		3.5 %
86.7	100		114.7		132.9		2.9 %

ureau of the Census, Population of Peru, estimates and projections: 1962 to 2002, Demographic Report for Foreign Countries,
P-96, No. 4, U.S. G.P.O., Washington D.C., 1971; data from Table 1, p. 45.

predictable patterns.[1] The other data reflect an assumed gradual decline of 25 per cent in fertility over the period 1962 to 1989, the 'moderately declining fertility model'. This seems to be the maximum decline in fertility that can be expected, certainly the maximum that would have any effect on the period under question. Since most of the school-age population of the seventies are either already born or already fixed in demographic patterns of the late sixties, we find that the range of population assumptions has relatively little bearing during the years immediately ahead. But this observation does not diminish the long-term critical importance of the population question for education. It merely emphasizes how much population is a 'given' fact in the short run.

Table 98 groups the population according to the normal age-groups of the initial, basic, and superior levels of schooling. Even as we recall that in the next decade much schooling effort will continue outside these normal age-groups, it is important to see the population trends of the normal age-group. The number of five year-olds, who make up the age-group of initial education, grows somewhere between 28 and 38 per cent. (This age-group is most sensitive to the population assumptions during the next decade.) The Ministry projections are at 32 per cent. The higher age-brackets show less variation among the projections, and average somewhat higher decade growth rates than the youngest ages. According to these projections, there are particularly strong growth rates during this decade in the age-groups centering on second-level education (i. e. the first cycle of the superior level). Since, of course, virtually all projections show population growth in excess of 3 per cent per annum, a large part of the rising costs of education in the seventies will be caused by the underlying growth in numbers. At least a half and probably more of all extra financial resources will be devoted to expanded population for the foreseeable future.

C. ENROLMENT PROJECTIONS TO 1980

The official enrolment projections from the Education Sector Plan 1971-75 are shown in Tables 99 and 100, summed up by grade grouping, and distinguishing the public and private sectors, and the regular day

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[1] See U. S. Bureau of the Census, Population of Peru. Estimates and Projections : 1962 to 2002, Dem. Reports of foreign countries, Series P-96, No. 4, for the details of this assumption, which is based on the model life tables of Coale and Demeny, reflecting European experience in late 19th and early 20th centuries. Because of wider precedent, mortality data are considered more predictable than fertility data by experts. Projections made in this source used a single mortality model partly because of this greater predictability, but also to highlight the fertility side of the population equation.

Table 96. Three projections of school-age population, ages grouped by corresponding school level

Age three projections		1970	1975	1980	1970	1975	1980	1970-80 annual rate
		('000 persons)			(indices)			
5	I	425	487	559	100	115	132	2.8
	IIB	421	477	540	100	113	128	2.5
	IIA	421	488	583	100	116	138	3.3
6 - 14	I	3 314	3 813	4 379	100	115	132	2.8
	IIB	3 090	3 692	4 270	100	119	139	3.4
	IIA	3 [illegible]	3 697	4 387	100	120	142	3.6
15 - 17	I	868	1 065	1 220	100	123	141	3.5
	IIB	835	964	1 203	100	115	144	3.7
	IIA	835	964	1 203	100	115	144	3.7
18 - 21	I	1 021	1 231	1 474	100	121	144	3.7
	IIB	1 002	1 148	1 342	100	115	134	3.0
	IIA	1 002	1 148	1 342	100	115	134	3.0
TOTAL POP.	I	13 579	15 860	18 507	100	117	136	3.1
	IIB	13 285	15 390	17 874	100	116	135	3.1
	IIA	13 301	15 554	1[illegible] 384	100	117	138	3.3

Note: About 75 per cent of the discrepancy between the two estimating sources is located in the category of 6-14 yr. olds. Since both sources are projecting since the last census this is the age group most sensitive to assumed birth rates in the early 1960's. The 1972 census, when it becomes available, will show whether birth rates as high as those cited by the Ministry of Education were achieved.

Source: Projection I: Peru, Ministerio de Educación, Estadísticas Básicas Series Históricas, Lima, August 1972, Boletín de Análisis Demográfico, No. 6 de la Dirección Nacional de Estadística y Censos. Projection II: U.S. Bureau of the Census, Population of Peru, Estimates and projections: 1962 to 2002, Demographic Reports for Foreign Countries, Series P-96, No. 4, U.S. G.P.O., Washington D.C., 1971, Tables 1 and 2. Projections IIA and IIB are their Series A and B respectively.

Table 99. Enrolment projections - Education plan - Total (public plus private sectors)

Grades	Normal age	1971			1975			1980			Implied annual growth rates of enrolments %	
		('000) Enrolment	('000) Normal age population	(%) Enrolment ratio	('000) Enrolment	('000) Normal age population	(%) Enrolment ratio	('000) Enrolment	('000) Normal age population	(%) Enrolment ratio	1971-75	1971-80
Regular												
Initial	5	80.9	440.9	18.4	196.0	487.2	40.2	281.4	559.8	50.3	24.0	14.8
Basic I/II	6-11	2 401.8	2 368.5	101.4	2 826.6	2 644.9	109.6	3 014.7	3 042.0	99.1	4.1	2.5
Basic III	12-14	429.1	1 046.7	41.0	575.3	1 167.8	49.3	968.0	1 337.1	72.4	7.6	9.4
Superior I	15-17	163.6[2]	908.1	18.0	252.6[2]	1 065.2	23.7	556.2	1 220.0	45.6	11.5	14.6
Adult (Laboral)												
Basic I/II		238.8			388.1			545.5			12.9	9.6
Basic III		121.9			177.3			240.9			9.8	7.8
Superior I		28.0			57.2			-			19.5	-
Other												
Superior II	18-21	140.3[3]	1 047.0	13.4	169.7[3]	1 231.0	13.8	196.1	1 474.0	13.3	4.8	2.2
non-univ.		(27.9)			(31.7)			-				
university		(112.4)			(138.0)			-				
C.P.E.[1]		38.7			90.3			243.7			23.0	22.0
Special Education		4.0			8.6			15.5			21.0	16.2
TOTAL		3 647.1			4 741.7			6 062.0			6.1	5.8

1. Calificación profesional extraordinaria.
2. Does not include 12th grade.
3. Includes intermediate, teacher training and University.

Source: Peru, Ministerio de Educación, Oficina Sectoral de Planificación, *Plan Nacional de Desarrollo para 1971-75, Vol. VIII, Plan de Educación (Reajustado)* Lima, June, 1972. Tables 2-01, 2-02, 2-04, Enrolment ratios calculated by IIEP.

lment projections - Education plan - Total (public plus private sectors)

al age	1971 ('000) Enrolment	1971 ('000) Normal age population	1971 (%) Enrolment ratio	1975 ('000) Enrolment	1975 ('000) Normal age population	1975 (%) Enrolment ratio	1980 ('000) Enrolment	1980 ('000) Normal age population	1980 (%) Enrolment ratio	Implied annual growth rates of enrolments % 1971-75	Implied annual growth rates of enrolments % 1971-80
5	80.9	440.9	18.4	196.0	487.2	40.2	281.4	559.8	50.3	24.0	14.8
-11	2 401.8	2 368.5	101.4	2 826.6	2 644.9	109.6	3 014.7	3 042.0	99.1	4.1	2.5
-14	429.1	1 046.7	41.0	575.3	1 167.8	49.3	968.0	1 337.1	72.4	7.6	9.4
-17	163.6[2]	908.1	18.0	252.6[2]	1 065.2	23.7	556.2	1 220.0	45.6	11.5	14.6
	258.8			388.1			545.5			12.9	9.6
	121.9			177.3			240.9			9.8	7.8
	28.0			57.2			-			19.5	-
-21	140.3[3]	1 047.0	13.4	169.7[3]	1 231.0	13.8	196.1	1 474.0	13.3	4.8	2.2
	(27.9)			(31.7)			-				
	(112.4)			(138.0)			-				
	38.7			90.3			243.7			23.0	22.0
	4.0			8.6			15.5			21.0	16.2
	3 647.1			4 741.7			6 062.0			6.1	5.6

n profesional extraordinaria.

clude 12th grade.

termediate, teacher training and University.

Ministerio de Educación, Oficina Sectoral de Planificación, *Plan Nacional de Desarrollo para 1971-75, Vol. VIII, Plan de Educación* *tado*) Lima, June, 1972. Tables 2-01, 2-02, 2-04, Enrolment ratios calculated by IIEP.

Table 100. Enrolment projection - Educational plan public and private sectors ('000 persons)

Grades	Public only 1971	Public only 1975	Public only 1980	Private only 1971	Private only 1975	Private only 1980
Regular						
Initial	60.4	143.0	206.9	20.5	53.0	74.5
Basic I and II	2 053.5	2 430.9	2 592.6	348.3	395.7	422.1
Basic III	341.5	475.8	827.6	87.6	99.5	140.4
Adult (laboral)						
Basic I and II	226.3	367.7	517.1	12.5	20.4	28.4
Basic III	111.2	164.0	222.8	10.7	13.3	18.1
Other						
Superior I[2]	154.9[3]	243.2[3]	440.0	36.7[3]	66.6[3]	116.2
Superior II[4]	104.3	129.0	156.8	36.0	40.7	39.3
non-Univ.[5]	(21.5)	(25.5)	-	(6.4)	(6.2)	-
University	(82.8)	(103.5)	-	(29.6)	(34.5)	-
C.P.E.[1]	33.8	71.3	219.3	4.9	19.0	24.4
Special education	2.9	6.9	12.6	1.1	1.7	2.9
TOTAL	3 088.8	4 031.8	5 195.7	558.3	709.9	866.3

1. Calificación profesional extraordinaria
2. Combines regular and adult
3. Does not include 12th grade
4. Includes intermediate, teacher training and university
5. Superior non-university ; just intermediate and teacher training.

Source: Peru, Ministerio de Educación, Oficina Sectoral de planificación, Plan Nacional de Desarrollo para 1971-75, Vol. VIII, Plan de Educación (Reajustado). Lima, June, 1972. Tables 2-01, 2-02, 2-04, enrolment ratios calculated by IIEP.

Enrolment projection - Educational plan public and private sectors ('000 persons

	Public only			Private only		
	1971	1975	1980	1971	1975	1980
	60.4	143.0	206.9	20.5	53.0	74.5
I	2 053.5	2 430.9	2 592.6	348.3	395.7	422.1
	341.5	475.8	827.6	87.6	99.5	140.4
1)						
I	226.3	367.7	517.1	12.5	20.4	28.4
	111.2	164.0	222.8	10.7	13.3	18.1
	154.9[3]	243.2[3]	440.0	36.7[3]	66.6[3]	116.2
	104.3	129.0	156.8	36.0	40.7	39.3
5	(21.5)	(25.5)	-	(6.4)	(6.2)	-
7	(82.8)	(103.5)	-	(29.6)	(34.5)	-
	33.8	71.3	219.3	4.9	19.0	24.4
ation	2.9	6.9	12.6	1.1	1.7	2.9
	3 088.8	4 031.8	5 195.7	558.3	709.9	866.3

ión profesional extraordinaria

regular and adult

include 12th grade

intermediate, teacher training and university

non-university ; just intermediate and teacher training.

u, Ministerio de Educación, Oficina Sectoral de planificación, Plan Nacional de Desarrollo para 1971-75, Vol. VIII, de Educación (Reajustado). Lima, June, 1972. Tables 2-01, 2-02, 2-04, enrolment ratios calculated by IIEP.

programmes from the evening programmes. These projections comprise the government's intentions for further extension of education as provided in the General Law, and they embody the gradual implementation of the reform.

We can review what these intentions involve. Enrolment projections encompass the combined effect of many forces. They reflect the underlying population growth of the appropriate age-groups, and the assumptions about target enrolment rates for the respective age-groups. These results are then modified by the extent to which over-age students are still expected in the regular school programme, that extent itself a function of what enrolment rates have been in the recent past. Then there are the projections for adult programmes themselves. Projections must also account for shifts in the expected rate of repetition at the different grades; enrolment rates will be sensitive to the prospective rate of drop-out and re-entry into schooling. Finally as our discussion of Peruvian geography has shown, overall enrolment will be a function of the degree of penetration into less schooled areas in a spatial and geographic sense. Enrolment rates or enrolment rate targets are not simply given parameters. They are policy variables. The rate of schooling can be controlled at the margin by forces on the demand side or on the supply side of the schooling equation. Social demand forces can be controlling, as in the case of secondary and higher education in the past ten years, where the demand from families was a force pulling toward more schooling as fast as it could be supplied. In other cases the rate may be determined from the supply side. Some schooling, particularly primary schooling in areas where it has not been previously available nor highly prized, may be led 'from the supply side'. Promotion and recruitment efforts may be required to encourage retention and re-admission to schools and to prevent dropping out. Usually citizens must be convinced of the value of education rather than simply responding to an existent social demand in this case. The projections are the embodiment presumably of the expected outcome of all these forces.

A number of important structural changes are seen to grow out of the projected pattern for the decade. The new initial pre-school programme, introduced in 1972, will be progressively expanded until it reaches about half the five year-old age-group by 1980. This expansion will require a fast growth in the years until 1975, doubling by then, and almost redoubling thereafter. The basic first-level programme, particularly the introduction of its new forms of schooling and retraining of teachers, was targeted[1] for 1978 for both day and evening programmes, aiming for universal application of the programme by 1980 for the normal age-groups of grades 1 through 6. Because of the substantial progress already made in the sixties, further growth in these grades is the most modest of all the levels, 2.5 per cent per annum average up to 1980 - not much different from population growth. The Basic Third Cycle (B. III), grades 7-9, will come along much more rapidly, particularly in the last half of the decade. Using the population projections cited by the Ministry of Education, the enrolment ratios implicit in these projections suggest that this cycle, with its important ingredients of technical education leading to semi-qualified worker status, will grow from 40 per cent to about 72 per cent of the age-group, an annual rate of growth of almost 10 per cent. The other fast growing level, that of Superior First Cycle (S. I), ~~to be given~~ in the ESEP's, is expected to go from about 18 per cent to 45 per cent of its age-group, an overall growth rate of nearly 15 per cent per annum. This level, with its inputs of substantial technical training leading to qualified worker status, will also present a substantial challenge to the organization and mobilization of resources.

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[1] Peru, Presidencia de la República, Plan nacional de desarrollo para 1971-75, Vol. 1, Plan global.

University enrolments are to continue to grow, but at a much more modest rate. Although enrolments will go from 140 000 to 196 000, this increase represents just over 2 per cent per annum growth rate in the decade and will keep the enrolment rate of the normal age-group about constant. Evening programmes at all levels, but especially in B. I and B. II, will grow relatively quickly as will the skill-training programmes of the *Calificación profesional extraordinaria* (CPE). The special emphasis on evening and skill-training programmes is to fulfil the stated objectives of eliminating illiteracy by 1980 in the population aged 15 to 39 years and substantially upgrading skills in the existing work force.

Where do these trends leave the structure of the educational system in 1980? In terms of enrolment, as summarized in Table 101 and Chart 17, regular schooling will be proportionally less and adult schooling relatively more. There will be less weight on primary schooling, particularly the first six years, and considerably larger proportions in the B. III and S. I cycles and in skill training. These marked structural shifts are an important expression of the priority of work training to meet the needs of the Peruvian economy. On the other hand, the changed mix of schooling levels and types will also affect cost estimates as we will see in the next section.

An analysis grade-by-grade enables us to explore this picture in somewhat greater detail (see Table 102). There, using our age-population projections[1], we can observe how the enrolment ratios will shift considerably *within* schooling levels (in addition). At the first

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[1] U. S. Bureau of the Census, *Population of Peru, estimates and projections : 1962 to 2002*, Demographic Report for Foreign Countries, Series P-96, No. 4, U. S. G. P. O., Washington D. C., 1971; data from Table 1, pp. 45, Series B; figures in parentheses from Series A.

Table 101. Enrolment projections - implied distribution by level and type of school (in percentages)

Grades	Grades	Normal age	1971	1975	1980
Regular			79.9	75.8	70.3
Initial	pre-school	5	2.2	4.1	4.6
Basic I and II	1-6	6-11	65.9	59.6	49.7
Basic III	7-9	12-14	11.4	12.1	16.0
Adult (Laboral)			9.9	11.9	13.0
Basic I and II			6.6	8.2	9.0
Basic III			3.3	3.7	4.0
Other					
Superior I[1]	10-12	15-17	5.2	6.5	9.2
Superior II[2]	13-16	18-21	3.9	3.6	3.2
C.F.E.[3]			1.1	1.9	4.0
Special Education			0.1	0.2	0.3
TOTAL			100.0	100.0	100.0

1. Combines regular and adult.
2. Includes intermediate, teacher training and university.
3. Calificación profesional extraordinaria.

Source: Peru, Ministerio de Educación, Oficina Sectoral de Planificación, Plan Nacional de Desarrollo, para 1971-1975, Vol. VIII, Plan de Educación (Reajustado), Lima, June 1972, Table 2-02.

level, taken as a whole, we have seen that apparent enrolment ratios converge at about 100 per cent. In 1970, the apparent enrolment rates by grade ranged from 173 per cent in the first grade to 33 per cent in the ninth grade[1], a rapidly tapering pyramid of education. But the goal of universal basic education results in some absolute, as well as strong relative, drop in the first two grades by the end of the decade, balanced by substantial growth in the higher first-level grades. With regional factors taken into account, some over-capacity may occur at times, given existing levels. Seventh, eighth, and ninth grade enrolments are not projected at 100 per cent, but are nonetheless set at ambitiously

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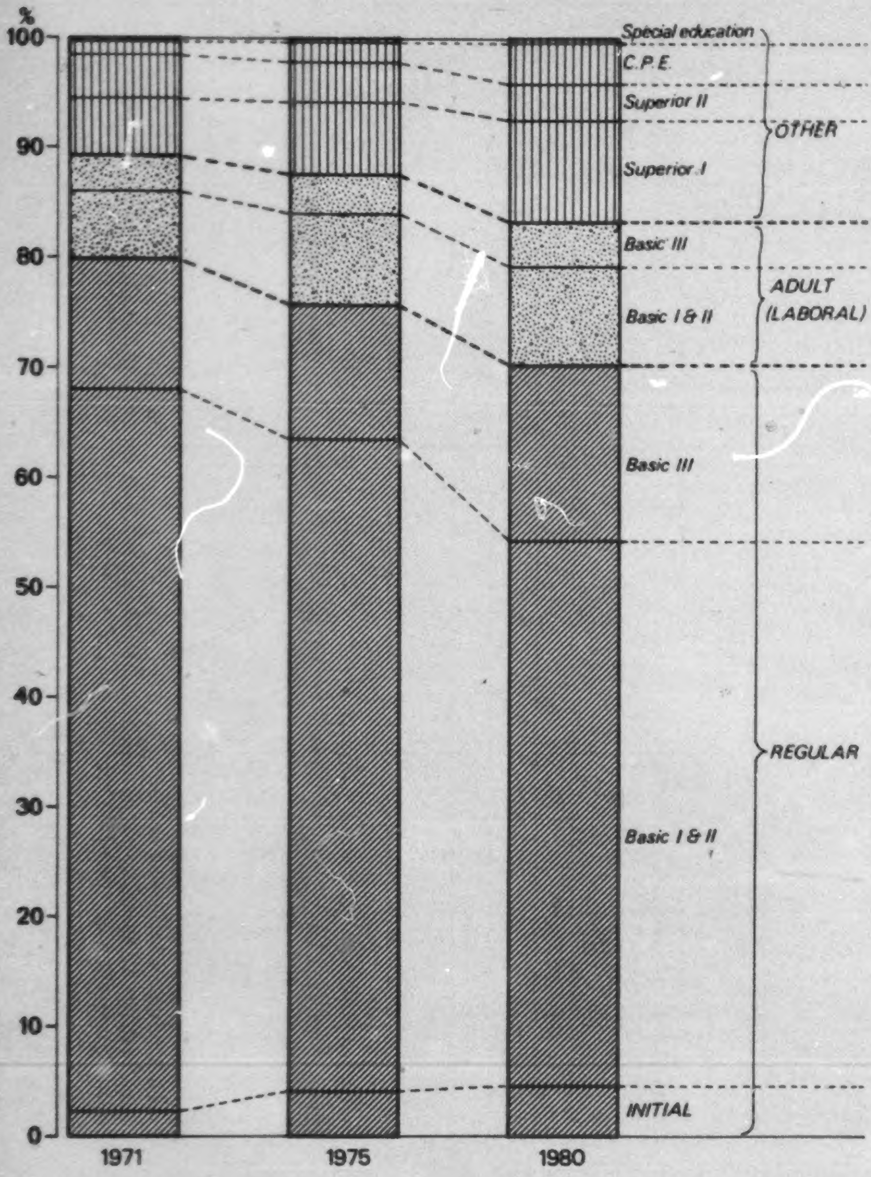
[1] Although 1970 data are not shown in Table 102, this can be seen in: Perú, Evolución del sistema educativo peruano, 1970-71, Documento presentado a la Conferencia Internacional de Educación, Geneva, 1971, Lima, 1971. Compare our population projections of Table 97.



Source: Data in Table 101.

Chart 17. Enrolment projections: distribution by level and school

Table 102. Projected enrolments and rates by grade - 1971-80 (public + private)

		Grades	Normal age	1971	1975			1980		
				Grade enrolment ('000)	Grade enrolment ('000)	Age-group population ('000)	Grade enrolment rates (%)	Grade enrolment ('000)	Age-group population ('000)	Grade enrolment rates (%)
BASIC	C I	1st	6	666.8	697.6	464	150	590.8	526	112
		2nd	7	473.1	596.4	451	132	541.8	513	106
		3rd	8	379.9	510.1	439	116	512.0	499	103
		4th	9	347.4	408.7	427	96	481.1	486	99
		Total :	6-9	1 867.2	2 212.8			2 125.7		
	C II	5th	10	291.8	327.1	415	79	455.5	474	96
		6th	11	242.8	286.7	403	71	433.5	461	94
		Total	10-11	534.6	613.8			889.0		
	CIII	7th	12	182.4	230.4	392	59	391.9	449	87
		8th	13	135.3	184.9	363	51	321.6	437	74
		9th	14	111.4	160.0	338	47	254.5	425	60
		Total	12-14	429.1	575.3			968.0		
SUPERIOR	C I	10th	15	91.5	138.6	332	42	210.0	413	51
		11th	16	72.1	114.0	321	36	184.6	401	46
		12th	17	-	-	(311)	-	161.6	389	42
		Total	15-17	163.6	252.6			556.2		
	C II	**Total**	18-21	140.3[1]	169.7[1]			196.1		
Total public plus private				3 134.8	3 824.2			4 735.0		

[1] Includes university and non-university superior.

Source : Enrolments data. Peru, Ministerio de Educación, Oficina Sectoral de planificación, Plan Nacional de Desarrollo para 1971-75, Vol. VIII, Plan de Educación (Reajustado). Lima, June, 1972. Table 2-03, population data from Table 97.

Projected enrolments and rates by grade - 1971-80 (public + private)

		1971	1975			1980		
des	Normal age	Grade enrolment ('000)	Grade enrolment ('000)	Age-group population ('000)	Grade enrolment rates (%)	Grade enrolment ('000)	Age-group population ('000)	Grade enrolment rates (%)
1st	6	666.8	697.6	464	150	590.8	526	112
2nd	7	473.1	596.4	451	132	541.8	513	106
3rd	8	379.9	510.1	439	116	512.0	499	103
4th	9	347.4	408.7	427	96	481.1	486	99
Total :	6-9	1 887.2	2 212.8			2 125.7		
5th	10	291.8	327.1	415	79	455.5	474	96
6th	11	242.8	286.7	403	71	433.5	461	94
Total	10-11	534.6	613.8			889.0		
7th	12	182.4	230.4	392	59	391.9	449	87
8th	13	135.3	184.9	363	51	321.6	437	74
9th	14	111.4	160.0	338	47	254.5	425	60
Total	12-14	429.1	575.3			968.0		
10th	15	91.5	138.6	332	42	210.0	413	51
11th	16	72.1	114.0	321	36	184.6	401	46
12th	17	-	-	(311)	-	161.6	389	42
Total	15-17	163.6	252.6			556.2		
Total	18-21	140.3[1]	169.7[1]			196.1		
ublic plus private		3 134.8	3 824.2			4 735.0		

cludes university and non-university superior.

: Enrolments data. Peru, Ministerio de Educación, Oficina Sectoral de planificación, Plan Nacional de Desarrollo para 1971-75, Vol. VIII, Plan de Educación (Reajustado). Lima, June, 1972. Table 2-03, population data from Table 97.

Table 103. Indices of projected enrolment growth by grade (Enrolment index 1971 = 100)

	Grades		Normal age	1971	1975	1980
BASIC	C I	1st	6	100	105	89
		2nd	7	100	126	115
		3rd	8	100	134	135
		4th	9	100	110	129
		Total	6-9	100	119	114
	C II	5th	10	100	112	156
		6th	11	100	118	179
		Total	10-11	100	115	166
	C III	7th	12	100	126	215
		8th	13	100	137	239
		9th	14	100	144	230
		Total	12-14	100	134	226
SUPERIOR	C I	10th	15	100	151	228
		11th	16	100	158	256
		12th	17	-	-	-
		Total[1]	15-17	100	154	241
	C II	Total	18-21	100	121	140

1. Based on 10th and 11th grades only.

Source: Calculated from Table 102.

high target rates. Seventh grade rates would move from 54 per cent to 87 per cent of the corresponding age population and ninth grade rates from 33 per cent to 60 per cent of the age population group. Second-level education as a whole would more than double its enrolment ratios.

Another dimension of the projections is seen in the indices in Table 103, which portray the implied nine-year growth at the various grade levels.

Table 103. Indices of projected enrolment growth by grade (Enrolment index 1971 = 100)

		Grades	Normal age	1971	1975	1980
BASIC	C I	1st	6	100	105	89
		2nd	7	100	126	115
		3rd	8	100	134	135
		4th	9	100	110	129
		Total	6-9	100	119	114
	C II	5th	10	100	112	156
		6th	11	100	118	179
		Total	10-11	100	115	166
	C III	7th	12	100	126	215
		8th	13	100	137	239
		9th	14	100	144	230
		Total	12-14	100	134	226
SUPERIOR	C I	10th	15	100	151	228
		11th	16	100	158	256
		12th	17	-	-	-
		Total[1]	15-17	100	154	241
	C II	Total	18-21	100	121	140

1. Based on 10th and 11th grades only.

Source: Calculated from Table 102.

high target rates. Seventh grade rates would move from 54 per cent to 87 per cent of the corresponding age population and ninth grade rates from 33 per cent to 60 per cent of the age population group. Second-level education as a whole would more than double its enrolment ratios.

Another dimension of the projections is seen in the indices in Table 103, which portray the implied nine-year growth at the various grade levels.

It is clear from the trends shown in the enrolment projections of the Plan that middle-level education, which contains the technical and vocationally oriented schooling, will be emphasized, as will be the goals of universal primary education. Resources will shift relatively from the provision of the earliest grades of the first level (in some cases even an absolute drop is in prospect), toward the highest grades. The pyramid of education will thus be straightened considerably. Evening and CPE programmes will grow substantially, and university enrolments are projected at little more than their existing enrolment rates. Whatever the qualitative factors associated with reform may be, these features of general growth in numbers spell more expensive education. Filling out the educational pyramid is crucial to a country growing rapidly economically with redefined national social goals, but as we shall see, the accomplishment of these goals will create strong financial demands.

D. RECURRENT COST PROJECTIONS OF THE EDUCATION PLAN

The adjusted education sector plan for 1971-75[1], issued in 1972, includes its own projection of recurrent expenditures by schooling level for the first half of the decade, as shown in Table 104. The rate of growth, 9.3 per cent per annum, implies a nearly 40 per cent increase during the Plan period and a large commitment of new funds to education. These cost projections not only embody the enrolment projections just discussed, but include all changes contemplated in the variables which determine unit costs - an implicit allowance for salary, student-teacher ratios, and other assumptions including those of change in method with the reform.

One approach we can take to the projection of costs to 1980 is to project the unit costs of 1971 implicit in the Table 104 figures, multiplied by the enrolment growth for the rest of the decade. This calculation is done in Table 105 and provides a rough check of the costs of enrolment growth per se given implicit 1971 unit costs - a straight extrapolation. The slackening of overall enrolment growth brings the projected annual growth rate down to 6.2 per cent (i.e. freezing 1971 unit costs), - still a large growth, and still sensitive to the structural shifts toward more expensive levels of education implicit in the enrolment projections.

The 1971 implied unit costs, shown in Table 105, are interesting in themselves in this respect. Notice the high unit costs of B. III and S. I (S/. 3 654, 1971, identical for both levels), and the even higher unit costs for B. III of the evening (laboral) programmes (S/. 4 373). These are the expensive work-qualifying phases of schooling, which will coincide with strong enrolment growth. And if we turn to another fast growing enrolment area, the CPE programmes, it appears that

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[1] Peru, Ministerio de Educación, Oficina Sectoral de Planificación, Plan Nacional de Desarrollo para 1971-75, Vol. VIII, Plan de Educación (reajustado), Lima, June 1972.

Table 104. Education plan projections of enrolments and public education recurrent expenditures 1971-75

	1971		1975	
	('000) Enrolments	(1971 soles'000,000) expenditures	('000) Enrolments	(1971 soles' 000,000) expenditures
Initial	60.4	108.6	143.0	283.1
Básica regular I and II	2 053.5	4 408.9	2 430.9	5 323.7
Básica regular III	341.5	1 247.8	475.8	1 903.2
Superior I	154.9	566.1	243.2	1 109.8
new system			(27.4)	(246.6)
old system			(215.8)	(863.2)
Superior non univ.	21.5	173.9	25.5	229.5
Superior II university	82.8	1 246.1	103.5	1 557.7
Subsidy to private universities		20.3	-	23.8
Básica laboral	337.5	694.3	531.7	1 277.2
- I	129.4	91.9	(206.6)	(268.4)
- II	96.9	116.1	(161.1)	(352.8)
- III	111.2	486.3	(164.0)	(656.0)
C.P.E.	33.8	87.0	71.3	378.6
Special education	2.9	40.0	6.9	84.3
Teacher retraining	11.3	97.4	26.8	231.0
Sub-total	3 100.1	8 690.4	4 058.6	12 401.9
Other expenditures		666.0		950.7
Total public current expenditures		9 356.4		13 352.6
Four-year growth factor			1.31	1.43
Per annum equivalent			6.9%	9.3%

Source. Peru, Ministerio de Educación, Oficina Sectoral de planificación, Plan Nacional de Desarrollo para 1971-75, Vol. VIII, Plan de Educación (Reajustado). Lima, June, 1972. Table 6-02.

Table 105. 1980 projected public recurrent education expenditures based on 1971 Educational Plan implied unit costs

	1971			1980	
	('000) enrolments	(1971 S/.'000,000) expenditures	(soles) implied unit costs	('000) enrolments	(1971 S/.'000,000) expenditures
Initial	60.4	108.6	1 796	206.9	372.0
Básica regular I and II	2 053.5	4 408.9	2 147	2 592.6	5 566.3
Básica regular III	341.5	1 247.8	3 654	827.6	3 024.1
Superior I	154.9	566.1	3 654	440.0	1 607.8
Superior II non-univ.	21.5	173.9	8 088	39.2[1]	317.0
Superior II university	82.8	1 246.1	15 050	117.6[1]	1 769.9
Subsidy to private universities	-	20.3	-	-	20.3
Básica laboral	337.5	694.3	2 057	739.9	1 449.5
- I	129.4	91.9	710	517.1	475.2[2]
- II	96.9	116.1	1 198		
- III	111.2	486.3	4 373	222.8	974.3
C.P.E.	33.8	87.0	2 574	219.3	564.5
Special education	2.9	40.0	13 793	12.6	173.8
Teacher retraining	11.3	97.4	8 619	11.3	97.4
Sub-total	3 100.1	8 690.4		5 207.0	14 962.6
Other expenditures		666.0			1 146.1[3]
Total public current expenditures		9 356.4			16 108.7
Nine-year growth factor 1971-80				1.68	1.72
Per annum equivalent				5.9 %	6.2 %

1. Assumes 25 per cent of superior are non-university, about same percentage projected for 1975 in education plan.

2. A combined unit cost for I and II for 1970 of 9.19 is used.

3. Assumed constant percentage of sub-total.

Source: IIEP ; 1971 data from Table 104 ; 1980 enrolments from Table 100.

Table 106. 1980 projected public recurrent education expenditures based on 1975 unit costs

	1980 Enrolments ('000) (1)	1975 Unit costs (soles 1971) (2)	1980 Expenditures (soles 1971 '000,000) (3)
Initial	206.9	1 980	409.7
Básica regular I and II	2 592.6	2 190	5 677.8
Básica regular III	827.6	4 000	3 310.4
Superior I	440.0	4 563	2 007.7
- new system	-	9 000	
- old system		4 000	
Superior non-univ.	39.2[1]	9 000	352.8
Superior II university	117.6[1]	15 050	1 769.9
Subsidy to private universities	-	-	23.8[2]
Básica laboral	739.9	2 402	1 764.6
- I	517.1	1 689	873.4
- II			
- III	222.8	4 000	891.2
C.P.E.	219.3	5 310	1 164.5
Special education	12.6	12 217	153.9
Teacher retraining	11.3	8 619	97.4
Sub-total	5 207.0		16 732.5
Other expenditures			1 281.7[3]
Total public current expenditures			18 014.2
Nine-year growth factor 1971-80	1.66		1.92
Per annum equivalent	5.9 %		7.5%

1. Assumes 25 per cent of superior are non-university.
2. 1971-75 education plan figure for 1975 brought forward.
3. Assume constant (1971) percentage of sub-total.

Source: Enrolment data from Table 100, 1975 unit cost data calculated from Table 104. Column (3) = Column (1) x column (2).

Table 107. Aggregate public recurrent education expenditures projections to 1980

	(1) Matching of elements included: in unit cost data	(2) in 1971 and projected data		(3) 1971 enrolments ('000) persons	(4) 1980 projected enrolments[1] ('000) persons	(5) 1971 costs: I. Unit total II. Unit salary III. Unit non-sal.
Pre-school	-	-		60	207	I. 1 937 II. 1 840[4] III. 97
First level	Regular and laboral and literacy (grds.TR-5)	Básica 1st and 2nd cycle (grds.1-6)		2 280	3 110	I. 1 817 II. 1 760 III. 57
Second level	Second level (Secondaria) (grds.1-5)	Básica III (grds.7-9) and Sup.I cycle (grds. 10-12)	 Total	453 155 608	1 050 440 1 490	I. 3 315 II. 3 025 III. 290
Teacher training and non-university higher	Normal school enrol.	Superior cycle (grds. 13-16)		104[2] (15	157[2] (23	I.10 183 II. 8 611 III. 1 568
University	University enrolments			(89	(134	I.13 224 II.10 579[3] III. 2 645
Out-of-school	Professional (formación competencia and artesanal)			34	219	I. 2 414 II. 2 293[4] III. 121
Total recurrent expenditure implied[5]						
9-year growth factor						
Per annum compound growth equivalent						

1. Estimated at IIEP from data of Peru, Ministerio de Educación, Oficina Sectoral de Planificación, Plan Nacional de Desarrollo para 1971-75, Vol.VIII, Plan de Educación (Reajustado). Lima, June, 1972. Enrolments are from Table 2-02, p.26A.
2. Disaggregated at IIEP according to 1970 proportions.
3. Assumed 80 per cent of total in absence of specific data.

Source: IIEP.

projected unit costs will exceed those of the Basic Laboral Programme. Work qualification is expected to be expensive.

If we allow unit costs to increase according to the Plan projections to their 1975 levels, and then project forward by enrolment growth for the second half of the decade, we get a second 1980 projection as shown in Table 106. This approach produces an expenditure growth rate for the decade of 7.5 per cent per annum, somewhat higher[1] than the calculation based upon 1971 unit costs.

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1. The Plan data reveal curious degrees of change and lack of change in the implicit unit costs of 1971 and 1975 as calculated in Tables 105 and 106, BI and II remain about the same, but considerable increases are shown in S I, and somewhat less in B III. Laboral and university unit costs remain constant. CPE more than doubles.

(6) Unit cost data source	(7) Implied 1971 recurrent expenditures (S/.000,000)	(8) Implied 1980 recurrent expenditures (S/.000,000)	(9) 1980 Unit costs with unit salary costs growing at 2% p.a.	(10) Implied 1980 recurrent expenditures (S/.000,000)	(11) 1980 Unit costs as preceding column plus non salary costs growing at 5% p.a.	(12) Implied 1980 recurrent expenditures (S/.000,000)
	116	401	2 296 2 199 97	475	2 349 2 199 150	486
Table 34 p. 68	4 143	5 651	2 160 2 103 57	6 718	2 191 2 103 88	6 814
Table 44 p. 81	1 502	4 939	3 905 3 615 290	5 818	4 065 3 615 450	6 057
Table 49 p. 87	153	234	11 859 10 291 1 568	273	12 723 10 291 2 432	293
Table 61 p. 100	1 177	1 772	15 228 12 643 2 645	2 049	16 746 12 643 4 103	2 244
Table 62[6] p. 101	82	529	2 861 2 740 121	627	2 928 2 740 188	641
	7 173	13 526 1.8857 7.3%		15 960 2.2250 9.3%		16 535 2.3082 9.7%

[4] Assumed to be 95 per cent of total in absence of specific data.

[5] Totals exclude subsidies to private education, special education, and teacher retraining.

[6] Used data for 1970.

E. PROJECTIONS BASED ON HISTORICAL UNIT COST DATA

It is also possible to make a projection based upon our analysis of unit costs in Chapter II. We start in Table 107 to do this separating the impact of enrolment growth from that of shifts in unit costs. It will be recalled that our unit cost data of Chapter II were presented and analyzed in terms of the school system in force in the sixties. The first task, then, is to match the schooling levels of that period and their unit costs, using 1971 as a base year, with the new levels employed for planning and statistical purposes in the seventies. This match is made explicit in Columns (1) and (2) of Table 107. Working up aggregate expenditure data from unit cost times enrolment data gives us a projected 1971 total educational expenditure of over

S/. 7 000 million, somewhat less than the actual expenditures we have seen, providing some check on the method.[1] Our first projection, Column (8) assumes no change in 1971 unit costs and, as a result solely of enrolment projections, yields 1980 recurrent expenditures at S/. 13 526 million, an annual growth rate of 7.3 per cent. There are a number of reasons for thinking of this figure as a minimum, perhaps even less than a minimum, trend for future costs. To add further realism, and to provide a sensitivity check on the effects of salary increases, we test successively the assumptions of first, a 2 per cent annual growth in unit salary costs (Columns 9 and 10), and then in addition to this, a 5 per cent annual growth in non-salary costs (Columns 11 and 12). Using these various assumptions produces a range of growth between 7.2 per cent and over 10 per cent per annum in total recurrent real cost of education in Peru.

To compare our education projections more closely to those made for the economy in Chapter V, we test a further set of hypotheses in Table 108. We assume a growth in salary unit costs of 2.9 per cent as a 'maximum' hypothesis. Such growth would just keep pace, for example, with the growth of per capita GDP associated with our maximum economic growth model.[2] This approach would yield a growth rate of 10.2 per cent per annum for the recurrent budget for education until 1980. With the addition of 5 per cent growth in non-salary unit costs, the growth rate would be 10.6 per cent per annum.

The various projections we have considered show a range of about 6.2 per cent to over 10 per cent real per annum growth of educational expenditures for the 9 years following 1971. These projections are recapitulated in Table 109 and Chart 18. We feel that the most realistic minimum estimate of growth in average teacher salary unit costs is the 2.9 per cent figure consistent with our 'high' economic projection of the growth in per capita G. D. P. of the same amount. If average teacher salaries grow by this amount, and if material inputs are to catch up in the Peruvian educational system, a 5 per cent growth rate in unit expenditures of that type is not unreasonably high. Our

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1. This technique projects only the public expenditures for the levels included and ignores, for instance, subsidies to private education, but since the objective is to derive growth rates, exclusions probably do not detract much from the applicability of the projections.
2. See Table 93 of Chapter V, compared to population data of U. S. Bureau of the Census, Population of Peru, estimates and projections: 1962 to 2002, Demographic reports for foreign countries, Series P-96, No. 4, U. S. G. P. O., Washington D. C., 1971, p. 45 for example.

Table 108. Aggregate public recurrent education expenditure projections to 1980 - 'Maximum' hypothesis

	(1) Matching of elements included: in unit cost data	(2) in 1971 and projected data	(3) 1971 enrolments ('000) persons	(4) 1980 projected enrolments[1] ('000) persons	(9) 1980 Unit costs with unit salary costs growing at 2,9% p.a.	(10) Implied 1980 recurrent expenditures (S/.'000,000)	1980 (11) Unit costs as preceding column plus non-salary costs growing at 5% p.a.	(12) Implied 1980 recurrent expenditures (S/.'000,000)
Pre-school	-	-	60	207	I. 2 477	513	2 530	524
					II. 2 380		2 380	
					III. 97		150	
First level	Regular+laboral +literacy (grds.TR-5)	Básica 1st + 2nd cycle (grds.1-6)	2 280	3 110	I. 2 333	7 256	2 364	7 352
					II. 2 276		2 276	
					III. 57		88	
Second level	Second level (Secondaria) (grds.1-5)	Básica (grds. 7-9)+ Sup.I cycle (grds. 10-12)	453	1 050	I. 4 203	6 262	4 363	6 501
			155	440	II. 3 913		3 913	
			Total 608	1 490	III. 290		450	
Teacher training+ non-university higher	Normal school enrol.	Superior cycle (grds. 13-16))	(15	(23	I. 12 705	292	13 569	312
		)	(	(	II. 11 137		11 137	
		)	104[2] (	157[2] (134	III. 1 568		2 432	
		)	(	(				
		)	(	(				
University	University enrolments	)	(89	(	I. 16 328	2 188	17 786	2 383
					II. 13 683		13 683	
					III. 2 645		4 103	
Out-of-school	Professional (formación competencia + artesanal)		34	219	I. 3 087	673	3 154	691
					II. 2 966		2 966	
					III. 121		188	
Total recurrent expenditure implied[3]							17 184	17 763
9-year growth factor							2.3957	2.4764
Per annum compound growth equivalent							10.2%	10.6%

1. Estimated at IIEP from data of Peru, Ministerio de Educación, Oficina Sectoral de Planificación, Plan Nacional de Desarrollo para 1971-75, Vol. VIII, Plan de Educación (Reajustado), Lima, June, 1972.
2. Disaggregated at IIEP according to 1970 proportions.
3. Totals exclude subsidies to private education, special education, and teacher retraining.

Source: IIEP

Aggregate public recurrent education expenditure projections to 1980 - 'Maximum' hypothesis

(1) Matching of elements included: in unit cost data	(2) in 1971 and projected data	(3) 1971 enrolments ('000) persons	(4) 1980 projected enrolments[1] ('000) persons	(9) 1980 Unit costs with unit salary costs growing at 2,9% p.a.	(10) Implied 1980 recurrent expenditures (S/.'000,000)	1980 (11) Unit costs as preceding column plus non-salary costs growing at 5% p.a.	(12) Implied 1980 recurrent expenditures (S/.'000,000)
-	-	60	207	I. 2 477	513	2 530	524
				II. 2 380		2 380	
				III. 97		150	
Regular+laboral +literacy (grds.TR-5)	Básica 1st + 2nd cycle (grds.1-6)	2 280	3 110	I. 2 333	7 256	2 364	7 352
				II. 2 276		2 276	
				III. 57		88	
Second level (Secondaria) (grds.1-5)	Básica (grds. 7-9)+ Sup.I cycle (grds. 10-12)	453	1 050	I. 4 203	6 262	4 363	6 501
		155	440	II. 3 913		3 913	
		Total 608	1 490	III. 290		450	
Normal school enrol.	Superior cycle (grds. 13-16)	(15	(23	I. 12 705	292	13 569	312
		(	(	II. 11 137		11 137	
		104[2] (	157[2] (134	III. 1 568		2 432	
University enrolments		(89	(	I. 16 328	2 188	17 786	2 383
				II. 13 683		13 683	
				III. 2 645		4 103	
Professional (formación competencia + artesanal)		34	219	I. 3 087	673	3 154	691
				II. 2 966		2 966	
				III. 121		188	
nt expenditure implied[3]						17 184	17 763
factor						2.3957	2.4764
pound growth equivalent						10.2%	10.6%

d at IIEP from data of Peru, Ministerio de Educación, Oficina Sectoral de Planificación, Plan Nacional de Desarrollo 1-75, Vol. VIII, Plan de Educación (Reajustado), Lima, June, 1972.

gated at IIEP according to 1970 proportions.

xclude subsidies to private education, special education, and teacher retraining.

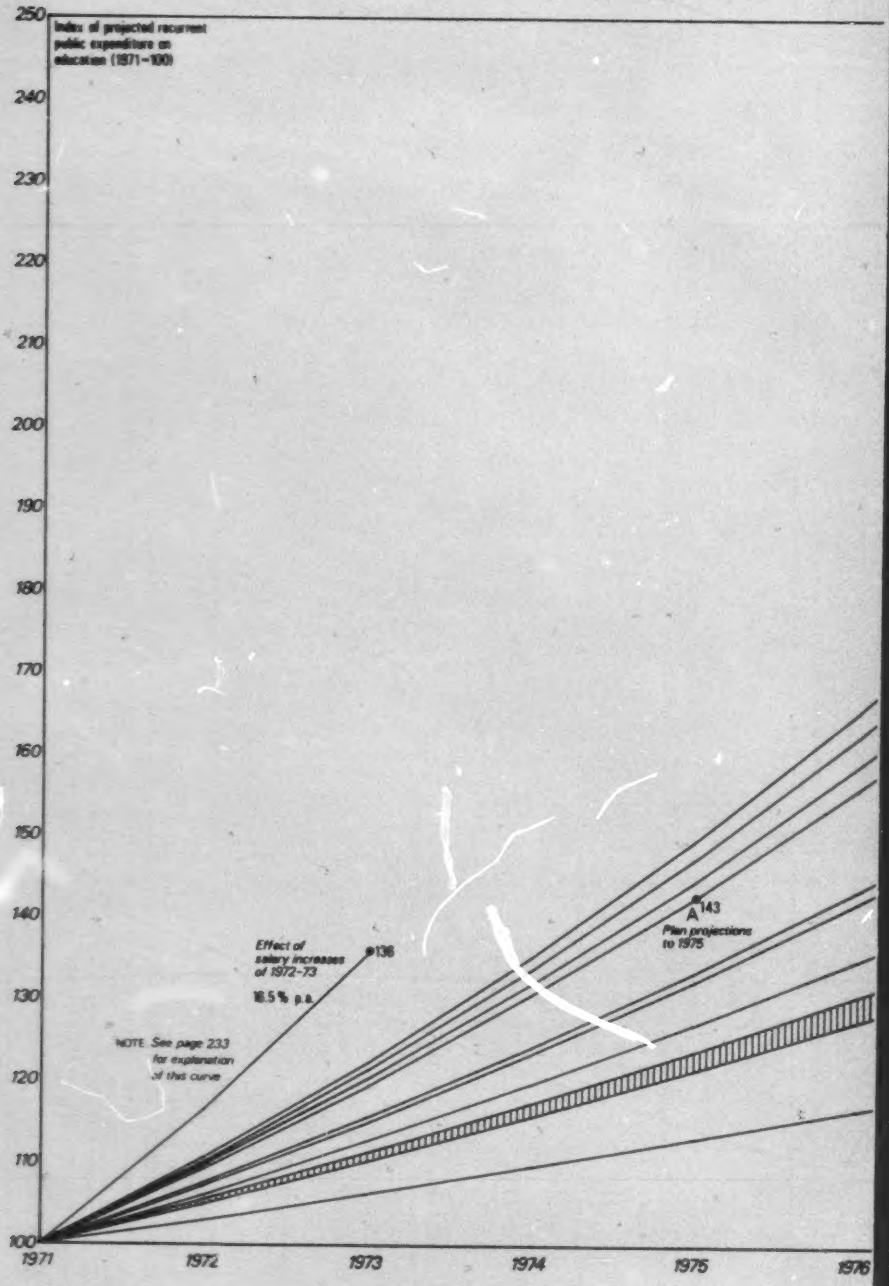


Chart 18. Expenditure growth paths of Table 109

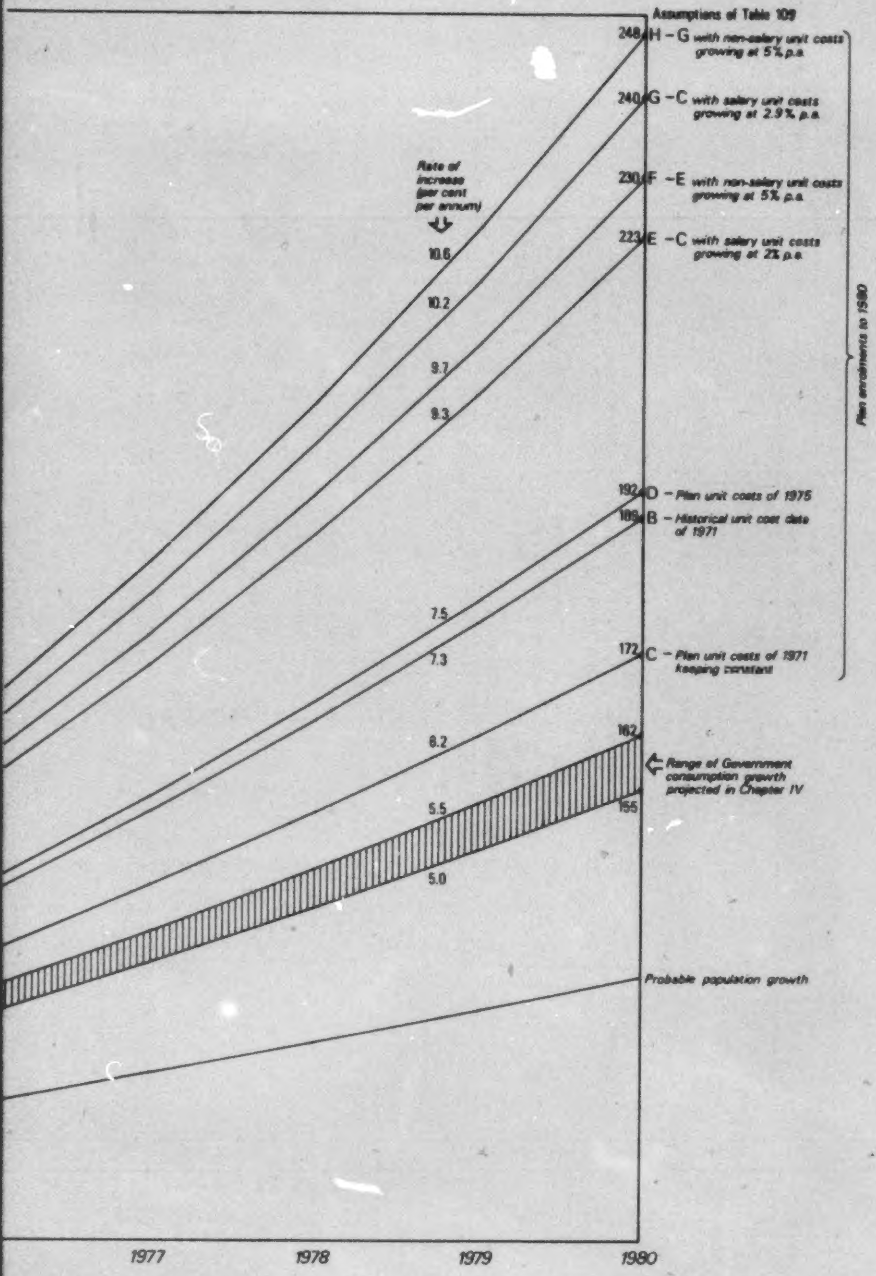

Assumptions of Table 109
248 H – G with non-salary unit costs growing at 5% p.a.
240 G – C with salary unit costs growing at 2.9% p.a.
230 F – E with non-salary unit costs growing at 5% p.a.
223 E – C with salary unit costs growing at 2% p.a.
Rate of increase (per cent per annum)
10.6
10.2
9.7
9.3
Plan enrolments to 1980
192 D – Plan unit costs of 1975
189 B – Historical unit cost data of 1971
7.5
7.3
172 C – Plan unit costs of 1971 keeping constant
6.2
162
Range of Government consumption growth projected in Chapter IV
155
5.5
5.0
Probable population growth
1977
1978
1979
1980

Table 109. Recapitulation of projected growth rates of recurrent public expenditures on education[1]

Projection	Until	Major Assumptions	Implied growth rate p.a.
See Table 104	1975	A. Plan enrolment projections until 1975 Plan unit costs of 1975	9.3%
See Table 105	1980	B. Plan enrolment until 1980 (This assumption continues in all the following projections) Plan unit costs of 1971 remaining constant	6.2
See Table 106	1980	C. Plan projected unit costs of 1975	7.5
See Table 107			
1.	1980	D. Unit costs historical data of 1971	7.3
2.	1980	E. Unit cost data of 1971 with salary unit costs growing at 2% p.a.	9.3
3.	1980	F. As previous projection adding non-salary unit costs growing at 5% p.a.	9.7
See Table 108			
4.	1980	G. Unit costs data of 1971 with salary unit costs growing at the maximum economic projection of per capita GDP, 2,9%	10.2
5.	1980	H. As previous projection adding non-salary unit costs growing at 5% p.a.	10.6
See text p.224/225 -	1973	Effects of declared salary increases of 1972 and 1973.	16.5

1. Except for subsidies to private education, costs of special education, and teacher retraining.
2. These salaries will not be implemented fully until the end of 1974.

Table 110. First-category teachers' salaries

		Current soles/month						1970 soles/month					
		1961	1964	1965	1968	1969	1972	1961	1964	1965	1968	1969	1972
Primaria:	Minimum	2 300	2 620	3 030	3 440	3 600	5 600	4 993	4 844	4 810	3 837	3 780	4 890
	Maximum	2 900	3 220	4 971	6 722	6 900	8 350	6 296	5 953	7 890	7 497	7 246	7 291
Secundaria:	Minimum	3 480	3 800	3 915	4 030	4 200	6 000	7 555	7 025	6 215	4 495	4 411	5 239
	Maximum	3 480	3 800	5 406	7 012	7 200	8 650	7 555	7 025	8 581	7 821	7 561	7 553
Técnica:	Minimum	2 610	2 930	3 263	3 592	3 600	5 600	5 667	5 417	5 179	4 006	3 781	4 890
	Maximum	2 610	2 930	4 754	6 577	6 600	8 050	5 667	5 417	7 546	7 335	6 931	7 029
Normal School:	Minimum	3 600	3 920	4 085	4 250	4 800	6 600	7 816	7 247	6 484	4 740	5 041	5 763
	Maximum	4 800	5 120	6 396	7 672	7 800	9 250	10 421	9 466	10 152	8 557	8 192	8 076

Source: Peru, Ministerio de Educación, "Mejoras otorgadas al Magisterio Nacional en los Ultimos Diez Años", Archivo 30200, Lima, 1972, mimeographed, Table 1, 1970 soles equivalent calculated by IIEP.

pitulation of projected growth rates of recurrent public expenditures on education[1]

Until		Major Assumptions	Implied growth rate p.a.
1975	A.	Plan enrolment projections until 1975 Plan unit costs of 1975	9.3%
1980	B.	Plan enrolment until 1980 (This assumption continues in all the following projections) Plan unit costs of 1971 remaining constant	6.2
1980	C.	Plan projected unit costs of 1975	7.5
1980	D.	Unit costs historical data of 1971	7.3
1980	E.	Unit cost data of 1971 with salary unit costs growing at 2% p.a.	9.3
1980	F.	As previous projection adding non-salary unit costs growing at 5% p.a.	9.7
1980	G.	Unit costs data of 1971 with salary unit costs growing at the maximum economic projection of per capita GDP, 2.9%	10.2
1980	H.	As previous projection adding non-salary unit costs growing at 5% p.a.	10.6
5 - 1973		Effects of declared salary increases of 1972 and 1973.	16.5

bsidies to private education, costs of special education, and teacher retraining.
s will not be implemented fully until the end of 1974.

t-category teachers' salaries

	Current soles/month						1970 soles/month					
	1961	1964	1965	1968	1969	1972	1961	1964	1965	1968	1969	1972
	2 300	2 620	3 030	3 440	3 600	5 600	4 993	4 844	4 810	3 837	3 780	4 890
	2 900	3 220	4 971	6 722	6 900	8 350	6 296	5 953	7 890	7 497	7 246	7 291
	3 480	3 800	3 915	4 030	4 200	6 000	7 555	7 025	6 215	4 495	4 411	5 239
	3 480	3 800	5 406	7 012	7 200	8 650	7 555	7 025	8 581	7 821	7 561	7 553
	2 610	2 930	3 263	3 592	3 600	5 600	5 667	5 417	5 179	4 006	3 781	4 890
	2 610	2 930	4 754	6 577	6 600	8 050	5 667	5 417	7 546	7 335	6 931	7 029
	3 600	3 920	4 085	4 250	4 800	6 600	7 816	7 247	6 484	4 740	5 041	5 763
	4 800	5 120	6 396	7 672	7 800	9 250	10 421	9 466	10 152	8 557	8 192	8 076

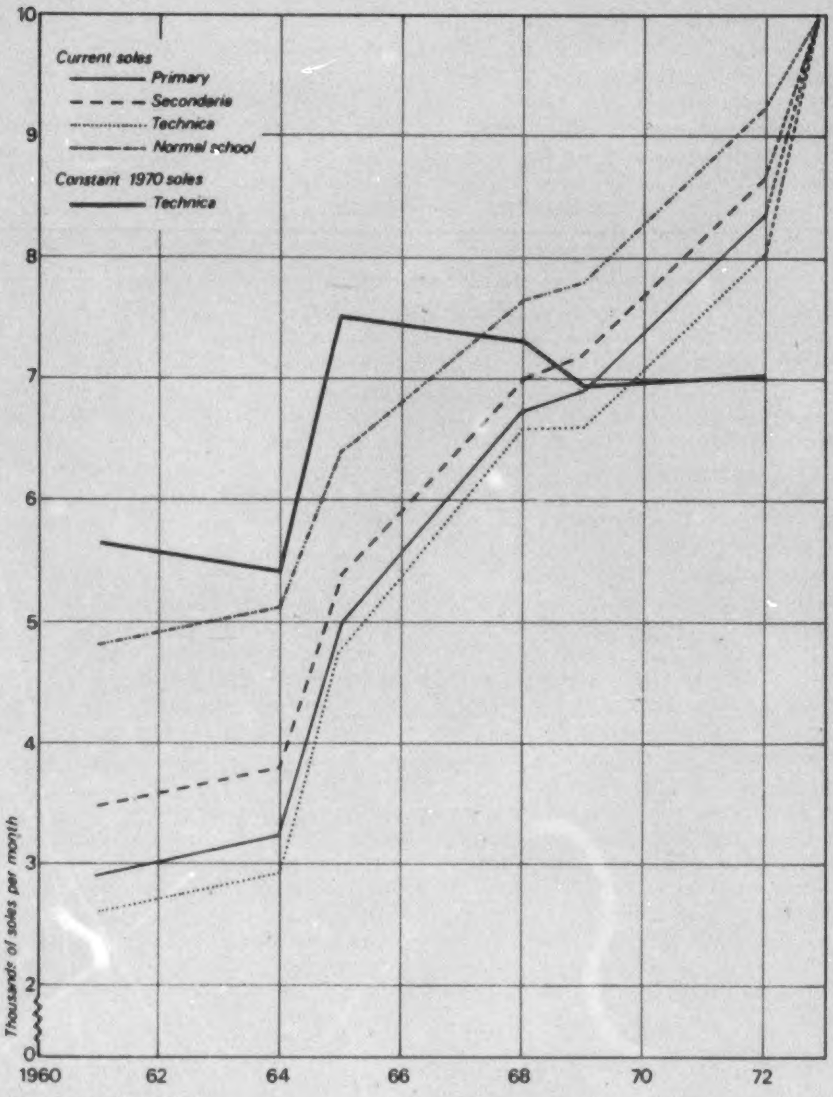
nisterio de Educación, "Mejoras otorgadas al Magisterio Nacional en los Ultimos Diez Años", Archivo 30200,
72, mimeographed, Table 1, 1970 soles equivalent calculated by IIEP.

estimated cost of the enrolment projections of the Educational Plan is therefore just above a 10 per cent growth rate. Since our economic projections in Chapter V suggested (and tested) an increase in government consumption at about 5.5 per cent per annum in real terms for the decade even with the higher assumed rate of economic growth, there is a gap.

There seems to be an impending conflict between educational goals and economic possibilities. The burden of proof would be on why this would not occur according to our assumptions, if this conflict is to be avoided we must make one or more of the following predictions: that general economic growth will outstrip our maximum growth hypothesis for the period to 1980; that the government's ability to tax and otherwise generate public revenues out of a given G.D.P. will increase; that educational spending will absorb a growing (rather than a constant or slightly shrinking) proportion of public revenues; that unit costs of 1971 level will have to fall; or that enrolment goals and other cost sensitive objectives will have to be scaled down. To put the assumption of 2 per cent growth of salary unit costs in perspective, or our own expected minimum of 2.9 per cent, even these high levels would not imply a return to the peak unit costs which were experienced in the sixties. However, using 1971 as a base against which to project the future course of teacher salaries is perhaps overly conservative. As our study of salary history in the next section shows, particularly the deflated data of Table 110 and Chart 19, the actual teacher salary scale was fairly unchanged in the years from mid-decade to 1970, and fell relative to per capita G.D.P. The collective preference of one of the largest and most articulate work forces in the country was undoubtedly to re-establish the better relative salary position of an earlier period. As we shall see, large moves in that direction were being made in the 1972-73 period, particularly in improving the position of the poorest paid portion of the teaching force.

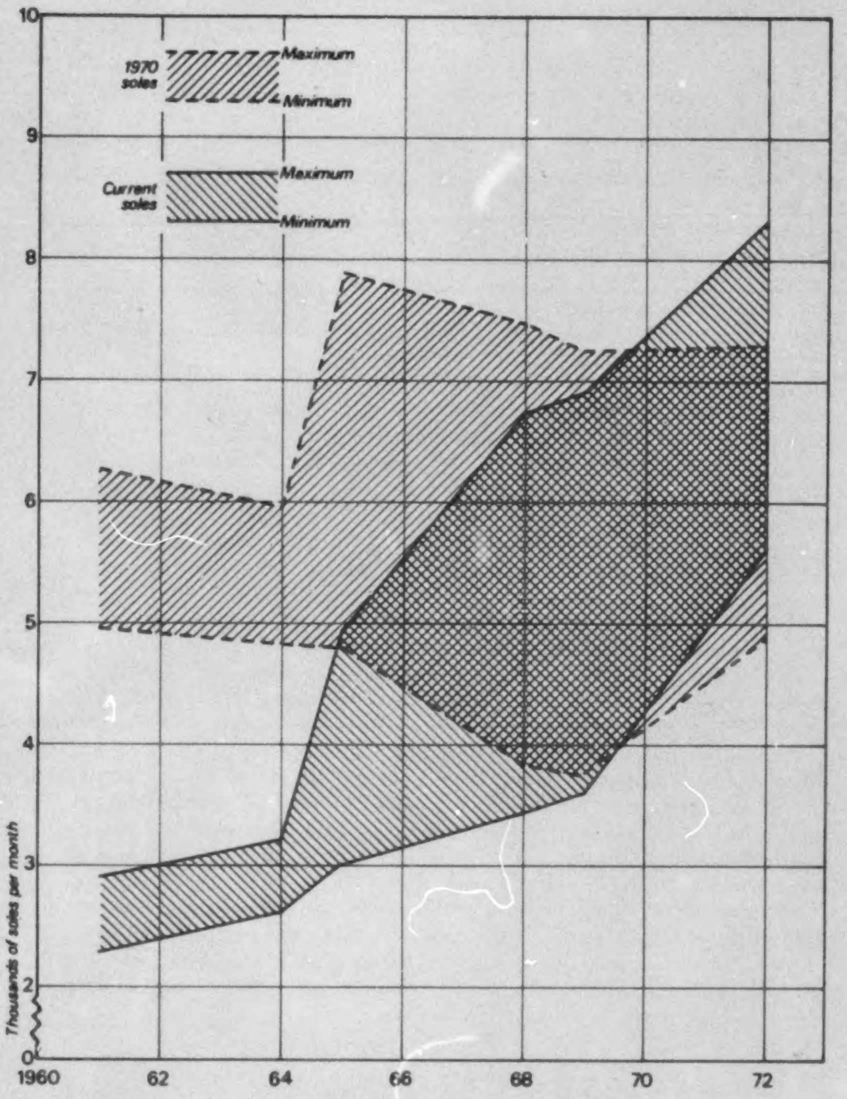
An increase in the student-teacher ratio might be thought to offer a major offset for cost increases, but this ratio has already shown such substantial aggregate improvement at the secondary and university levels, and such stability at a fairly high level at the primary level, that there does not seem to be much room for further improvement in it. Any deterioration from recent student-teacher ratios would raise costs even more rapidly than our projections show. As we shall consider in a later section the necessity to avoid increases in unit costs will be a constraint on the design of new programmes and novel methods of teaching.

Thus we conclude that the ambitious enrolment projections of the Educational Plan considered with respect to the history of the aggregate cost-determining variables, suggest growth of costs straining against, if not exceeding, the increase in resources which might reasonably be expected to be generated by further economic growth in the nation. Because of its special importance to educational costs, we must turn to a closer look at the history of salary policy, one of these key aggregate variables.



Source: data of Table 110

Chart 19. Maximum salaries of first-category teachers by school level



Source: data of Table 110

Chart 20. Primary teacher salaries range, first-category teachers

F. TEACHER SALARY POLICY

In Chapter II above, we have already seen the effects in the past decade of a salary policy which has allowed large fluctuations in average teacher pay. These are particularly noticeable when adjusted for inflation. But the performance of the averages masks the variety and complexity of the system of remuneration which has been in force. In this section we look at recent trends in salary structure and policy.

From 1961 to 1964, legislation and regulation dealing with teacher salaries grew more complex. A roll or scale (escalafón) of teacher categories had already been established in the mid-forties on the basis of academic degrees and pedagogical certification. The 1961 scale of remuneration[1] based a wider range of benefits on such factors as the nature of duties performed. By 1964, the Law 15215 (Ley del Estatuto y Escalafón Magisterial) established a new scale with a base pay determined solely in terms of years of service within teacher categories. It also established nine different benefits in 12 different classes of teachers. In subsequent criticism, this law has been claimed to contain between 500 and 800 different possible types and combinations of pay. It has been said to be difficult to budget 'regressive and unjust' in that it widened the pay differential between those at the higher and lower ends of the scale, and at times to produce a situation where teachers performing the same duties received as much as three or more times as much pay as their colleagues - largely or solely because of length of service.[2]

Beginning particularly with Decreto Ley 17 876 of 1969, there was an attempt to establish a new 'equitable and rational' system of remuneration for all public servants in the National Public Sector. This law established a uniform scale which placed teachers, along with all other public servants, under a common set of regulations. Four types of remuneration are established: base pay (básica), seniority pay (personal), post pay (al cargo) and special pay (especial). The base pay is represented by a 8 x 7 matrix of grades and sub-grades of employment as shown on the next page.

The matrix simply contains percentages of the very highest pay in the scale, that of Grade I, Sub-grade 1 (hereafter referred to as I, 1). Thus a public servant at Grade III, Sub-grade 5 earns 64 per cent of I, 1. Since most of the other categories of pay are calculated on the

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1. Decreto Supremo No. 18-A of 20 October 1961. This period is described in Peru, Ministerio de Educación, 'Mejoras otorgadas al Magisterio Nacional en los últimos diez años', Archivo 30200, Lima, 1972, mimeographed.
2. Ley 15215 is examined critically in 'El Peruano', Titular de educación formulo exposición a la prensa sobre remuneraciones a docentes', Lima, 3 January 1973, by present Ministry of Education statements.

	Sub-grade						
Grade	1	2	3	4	5	6	7
I	100	98	96	94	92	90	88
II	86	84	82	80	78	76	74
III	72	70	68	66	64	62	60
.	.	.	.	.	.	.	.
.	.	.	etc.	.	.	.	.
VIII	18	16	14	12	10	8	6

base pay, the system is readily adapted to the budgeting exercise. A I, 1 salary can be fixed (presently at S/. 30 000 per month), and this fixes all other salary elements, with the exception of those in the Special category, so that budgeting and trial budgeting are simplified. Seniority (personal) pay was fixed at 5 per cent of base pay for each five years of service, but not to exceed 40 per cent of base pay. Post pay (al cargo) was limited to 25 per cent of base pay and a system was established to effect the classification of all government posts by the Nacional Administración de Personal in co-ordination with the Instituto Nacional de Planificación. Many of the categories of special pay, such as high risk pay and re-enlistment bonuses, did not particularly apply to teachers, but the law also provided for a universal Christmas bonus (aguinaldos), and such things as overtime or exceptional service.

On the above scale for base pay, that of university personnel ranges over Grades III to V and that of primary and secondary teachers is being equalized at Grades VI and VII. Because the 1969 law, which came into effect 1 January 1970, decreased the disparities in pay for public servants, special provisions of a transitional and harmonizing character were required. The general tendency is to upgrade those in the lower categories, and to avoid individual downgrading from existing pay levels. Since the law came at a period of substantial general increases in pay, this adjustment was possible without great difficulty.

The main impact of the legislation in the late sixties was to standardize and simplify pay scales, to remove the wide discretionary setting of salary levels (although not all of it), and to provide a system designed for simpler budgeting.

Legislation in late 1972 and early 1973 has carried the process of improving salary policy further.[1] 'Technical improvements' have been made upon the earlier 1969 scale by reducing it from eight to seven grades by raising all of those in the lower half of the scale. The basic principles of the 1969 law were retained. Major innovations include the encouragement of public service in remote regions of the country and regional decentralization of public administration. An elaborate point system (each point equals 1 per cent of I, 1 salary level) is developed to give pay incentives for work in zones of less relative development[1], for work in areas of high altitude (above 3 000 metres), and for posts within 50 kms. of the frontier. Family allowances for dependents are fixed at a percentage (0. 35 per cent for 1973) of the I, 1 salary level. The Christmas bonus is also set at a progressive level, from 70 per cent of the annual fixed sum at Grade I, to 100 per cent at the two lowest grades. The pay by post is to be subjected to a more elaborate and standardized published table of posts.

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[1] The recent legislation and regulations are contained in:
Peru, Decreto Ley No. 19 848, 'Fijan escala procentual correspondiente a grados y sub-grados que regiran durante el período 1973-74', Lima, 26 December 1972.
Peru, Decreto Ley No. 19 847, 'Norman systema de remuneraciones para empleados del sector público nacional', Lima, 26 December 1972.
Peru, Decreto Supremo No. 033-72-PM, 'Sobre remuneraciones al cargo y especiales', Lima, 26 December 1972.
Peru, Resolución Suprema No. 0028-73-PM/ONAP, 'Dictan normas de aplicación de factores de evaluación para remuneración al cargo', Lima, 16 February 1973.

So far we have discussed the nature of the salary scale and payment system. It remains to look at trends in the amount of pay according to scale. Table 110 and, Charts 19 and 20 show the trends during the last dozen years. Taking the period as a whole, we can see that intermittent pay increases have been followed by years of no adjustment or a small adjustment which failed to match inflation. These sharply changing trends can be seen in Chart 20, using the example of First-category primaria teachers, particularly in the curves shown in constant 1970 Soles. There has been a trend away from pay differential according to school level and type. As Chart 19 shows, although the absolute gap in pay between the school types was kept intact until it was virtually eliminated in the 1973 pay awards, the general increases of all pay levels during the sixties had the effect of steadily reducing the percentage difference. During the sixties, Law 15 215, which has recently been described as 'regressive and unjust', had the effect of giving relatively large pay increases to those at the higher levels (based largely on years of service) and much smaller increases to those at lower levels. Chart 20 shows, for instance, that the lowest paid first category primary teachers were actually losing in real terms throughout the decade. This widening range in salaries is closed somewhat by the 1969 salary increases and even more by the most recent salary awards.

The recent salary increases are the result of three Decree Laws. Laws 18 700 and 18 953 had the effect of vastly reducing the difference between maximum and minimum pay for a given teacher category. Law 19 332 is an across-the-board S/. 400 per month to defray the costs of starting a new teacher co-operative (Cooperación de Servicios del Magisterio). Table 111 shows the difference between 1972 and 1973 pay scales for a typical teacher family with two dependents and with some credit for service in a less-developed region. The objectives of

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[1] See Map 1, p. 53.

Table 111. Comparison of 1972 and 1973 Representative Salaries : Teacher with two dependents, service in remote area - Soles/Month

Category	Years of service	Primary		Secondary	
		1972	1973	1972	1973
I	2	5 738	8 349	6 161	8 349
	5	6 733	8 739	7 276	8 739
	10	7 145	9 198	7 389	9 129
	20	9 123	10 081	10 945	11 487
II	2	5 012	7 113	6 065	7 113
	5	5 943	7 443	6 687	7 443
	10	6 525	7 773	7 070	7 845
	20	7 104	8 496	7 838	8 726
III	2	4 290	5 877	5 536	5 876
	5	5 230	6 147	6 502	6 932
	10	6 067	6 675	6 911	7 431
	20	7 031	7 874	7 345	8 045

Source: Decreto Ley No. 19 848, Lima, 1973, as reported in El Peruano, op. cit.

these increases are explained by public policy statements.[1] They are seen as part of a deliberate plan to achieve income redistribution goals in the teaching profession as in other areas of society; as a special concern with the plight of the lowest paid group, who has suffered most from inflation; and as an extraordinary effort to reward teachers 'in accord with their profession'. The effect is to reduce substantially the range of salaries within categories and between teaching levels. The total costs of recent salary increases are very high and are summarized as follows[2]:

		(S/. '000,000)
	(Decreto Ley 18 700	1 361
Laws affecting 1972 salaries	(Decreto Ley 18 953	1 670
	(Decreto Ley 19 332	923
Laws affecting 1973 salaries	(Decreto Ley 19 848	4 432
	Total increases	8 386

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1. See for instance: El Peruano, 'Titular de educación formulo exposición a la prensa sobre remuneraciones a docentes', Lima, 3 January 1973, a Ministry of Education statement.
2. El Peruano, ibid.

These salary increases in the biennial budget of 1973-74 require 33 per cent of the entire budget of operation of the Ministry of Education. The impact has necessarily been to 'require a contraction in the rate of expansion of educational services' and to 'reduce the means for enrolment and for other programmes planned for the implementation of the educational reform'. As a recent government statement[1] shows, the increases are more than the entire operating budget combined for the following areas:

	(S/. '000, 000)	
President's office	755	Presidencia
Judiciary	746	Poder judicial
Electoral authority	73	Poder electoral
Foreign Relations	796	Relaciones exteriores
Fishing	582	Pesquería
Industry and Commerce	748	Industria y comercia
Energy and Mines	723	Energía y Minas
Labour	372	Trabajo
Housing	962	Vivienda
Controller General	165	Contraloría General
National Institute of Planning	188	Inst. Nac. de Planif.
Transport and Communications	2 289	Transportes y comunicaciones
Total	8 321	

At first sight, such salary increases seem already to have increased educational costs more than is possible according to our earlier projections in this chapter. As our Tables 34 and 44 have shown, average teachers' salaries actually paid in 1972 have risen 17 per cent at the primary level and 55 per cent at the secondary level in real terms. Such increases return the ratio of secondary-level salaries to per capita G. D. P. to almost the highest level of the decade. With the additional impact of the 1973 salary increases it would appear that even our highest cost estimates are being exceeded.

In Chart 18, for instance, we show a rough indication of the impact that declared salary increases of 1972 and 1973 would have on the growth paths of public expenditures on education. The effect of just those awards might be as much as 16 per cent per annum over the two years, a rate steeper than the projections based on the Plan and our

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1. El Peruano, 'Titular de educación formulo exposición a la prensa sobre remuneraciones a docentes', Lima, 3 January 1973.

own earlier assumptions.[1] These increases may put further pressure on the capacity to finance education and may make less likely the achievement of quantitative and qualitative objectives of the Plan. We will discuss this possibility at greater length at the end of the chapter. However, there are some reasons why a jump of this magnitude may not hold on the path as we have depicted it on the chart.

Ministry officials believe that the full effects of the increases awarded in 1972 and 1973 will be felt only gradually during the period through 1974. Furthermore, given wide variability of past salary policy, it is possible that present salaries will once more be allowed to erode somewhat in real terms via the inflationary process. Our projections are all in constant value terms. By 1973 prices had risen more than 20 per cent above their 1970 level (our index for 1972 is approximately 114). The real value of these increases will have been partly offset by the time their impact is fully felt, but the impact is still sufficiently large to call into question the ability to sustain the goals of reform on the time path of the Plan.

G. PROJECTING CAPITAL COSTS

A first approach to making aggregative projections of capital costs is to analyze past unit capital costs. This analysis is attempted in the calculations of Table 112. There we compare the increases in enrolments experienced in the sixties with the cumulated capital expenditures of the same period. The results are expressed for the two half-decades and as an average for the period as a whole, all figures given in 1970 Soles. It is interesting to compare the resulting unit capital costs by schooling level. By this reckoning secondary-level unit costs are 3. 5 times those of the primary level. But university-level costs are more than ten times secondary level (more than half of the recorded capital spending was at the university level during the second half decade), and teacher-training costs are almost five times as high. It may be hazardous to project on the basis of such aggregate experience, since it is likely that the surges of investment of that period were associated with major expansions, and the investments may be of differing 'gestation' periods. There is some difference, but not much, in unit costs between the two 5-year periods by these calculations.

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1. We test the impact of the 1972 and 1973 salary increases by a rough projection of the same form as those in Table 107, but with the following assumptions: Let enrolments rise in straightline fashion for two of the nine years of the Educational Plan. Attribute the salary unit costs increases as follows: Pre-school and Primary, 36 per cent; Secondary, 26 per cent; Teacher-training, 40 per cent (the average salary rose by this amount in 1972); University, 1 per cent (since there are no indications available that show a rise in unit costs); C. P. E. same as Secondary. These somewhat arbitrary assumptions, though conservative, still produce the dramatic rise in expenditures mentioned.

Table 112. Unit-capital costs + projections

	UNIT COSTS						
	1960-65			1965-70			Average 1960-70
Level	Total capital expenditures (S/.'000,000 1970) (1)	Increase in enrolments ('000) (2)	Unit capital costs (S/.1970) (3)	Total capital expenditures (S/.'000,000 1970) (4)	Increase in enrolments ('000) (5)	Unit capital costs (S/.1970) (6)	Unit capital costs (S/.1970) (7)
Primary	243.5	575	423	265.3	379	700	562
Secondary	412.8	162	2 548	391.2	266	1 470	2 009
Teacher training	77.0	5.7	13 508	31.5	5.1	6 176	9 842
University	602.0	26.2	22 977	1 062.6	32.1	33 103	28 042
Out-of-school	8.3	7.1	1 169	18.4	18.7	983	1 076
Administration	1 005.9			162.6	-		
TOTAL	2 349.5			1 931.6			

1.Includes initial.

2.IIEP estimate.

3.Assumed same percentage of total (27.3 per cent) as during the 1960's.

Source: 1960's enrolments - Ministerio de Educación, Perú, Estadísticas Básicas Series Históricas, Table II, Lima, August 1972, capital expenditures Table 112, 1970's enrolments Table 100.

To project capital costs into the seventies, we use the Plan enrolment increases and multiply these by average unit capital costs of the past decade as one rough check. Since our enrolment projections are available only for the single years 1975 and 1980, we calculate the annual averages for each of the future half decades (more precisely 1971-75 and 1976-80). The resulting annual capital expenditures are very similar in each period - just over 400 million 1970 Soles. The reduction in the rate of increase in enrolments at the primary and university levels and in teacher-training helps to moderate the need for new capital, but stronger increases foreseen in secondary and technical training areas tend to work the other way. The total projection of capital spending arrived at by this procedure ranges from only 2 per cent to 3 per cent of the various projections we have made of recurrent expenditure. The small size of such expenditures relative to the salary costs is notable, for example.

We have already noted that capital expenditures have behaved in the classic fashion of the economic 'accelerator' phenomenon - that is, they have appeared to be a function of the rate of increase of current output (or current expenditure) rather than following an independent path. We have examined the past behaviour of capital expenditures to see what reasonable basis might be found for projection into the future. Table 113 displays the inflation-corrected levels of capital expenditure for the decade by school level. The fluctuations are very large at all levels, and the totals exhibit the shifts during the decade that we have already

	PROJECTIONS					
	1971-75			1975-80		
Level	1971-75 increase in enrolments ('000) (8)	Column 8 times Column 7 (9)	1971-75 average annual capital expenditures (S/.'000,000) (10)[4]	1975-80 increase in enrolments ('000) (11)	Column 11 times Column 7 (12)	1975-80 average annual capital expenditures (S/.'000,000) (13)[5]
Primary[1]	460	258.5	64.6	226	127.0	25.4
Secondary	88	176.8	44.2	197	395.8	79.2
Teacher training	4	39.4	9.8	1[2]	9.8	2.0
University	25	701.1	175.3	28	785.2	157.0
Out-of-school	38	40.9	10.2	176	189.4	37.9
Sub-total			304.1			301.5
Administration[3]			114.1			113.2
Total annual average capital expenditures			418.2			414.7

4. Column (10) = Column (9) divided by 4.
5. Column (13) = Column (12) divided by 5.

noted in studying rates of enrolment increase at different levels.

In Table 114, we test the relationship between total recurrent and total capital expenditure, the latter is stated first as the amount provided just by the central government and then in total. We also examine the year-to-year incremental capital-output ratio, which describes the relationship between the change in recurrent expenditure (an index of how current output of the educational system is changing) and the period's actual amount of capital expenditure. The relationship is not a constant one, certainly not on a year-to-year basis. Even if the capital-output link is a valid one, the lags may be greater than those revealed in any few years, and simply more variable here than would be true for a whole economic sector. But in the decade there is a fairly constant average of about 0. 5 for the central government, and 0. 75 for total capital, which tends to assert itself over a three-year period. The economic crisis of 1967, during which recurrent expenditures dropped absolutely in real terms, upsets these relationships but the surrounding years seem to average out.

Thus, for a S/. 1 million real increase in 'permanent' recurrent expenditure levels, the average capital-output relationship (less than one in this very labour-intensive sector) would suggest the need for S/. 750 000 in educational capital expenditures. It is interesting that no powerful counter trends appear during a decade in which so much growth and educational development occur. It should be noted that the widespread use of rented buildings for schools, particularly by no means entirely in the private sector, may have tended to understate the need for capital with increased enrolment. Since authorities are now calling for a reduction in the use of rented facilities, capital costs may increase relative to current expenditures in comparison with past experience.

Table 113. Trend of capital expenditure by level of education in public sector in constant value soles (S/. '000, 000 1970)

	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970
Administration	69.3	195.0	154.3	205.8	329.5	121.3	83.0	12.9	43.8	13.5	9.4
Primary	31.7	129.6	48.9	0.8	1.3	62.9	72.9	65.4	13.9	26.0	87.1
Secondary	11.4	35.6	1.5	0.2	39.0	336.3	105.6	76.4	17.4	33.5	158.3
Teacher training	-	3.3	19.5	0.4	6.8	47.0	11.7	8.1	1.7	2.6	7.4
Higher Education	21.2	42.3	91.4	111.9	176.6	179.8	219.0	204.1	262.8	186.9	171.4
Out-of-school	-	-	-	2.6	0.6	5.1	5.4	0.3	-	-	12.7
Total Capital Expenditure	133.7	406.0	315.9	321.8	553.7	752.4	497.[illegible]	367.1	339.6	262.7	446.3
Portion financed by Central Government	112.5	363.7	224.5	209.9	377.1	572.5	278.5	163.0	76.8	75.7	274.9

Source: Data are from Appendix II, Table II, adjusted to constant value 1970 soles by IIEP by index of personal consumption expenditure.

Table 114. Capital-recurrent expenditure relationships for education in the sixties (expenditures in 1970 S/. 000,000)

	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	Total 60-70
Total recurrent exp.[1]	3 280	3 820	4 777	5 676	6 276	8 524	10 155	10 291	8 066	8 372	8 752	
Year-to-year change in recurrent exp.[2]		+540	+957	+899	+600	+2248	+1631	+136	-2225	+306	+380	5 472
Central Govt.Capital Exp.[3]		364	224	210	377	571	279	163	77	76	275	2 616
Incremental Capital-Output relationship[4]		.67	.23	.25	.63	.25	.17	1.19	-.03	.25	.72	.48
Total Capital exp.[3]		406	316	322	554	752	498	367	340	263	446	4 264
Incremental Capital-Output relationship		.75	.33	.36	.92	.33	.31	2.70	-.15	.86	1.17	.78

1. Data are from Appendix II, Table I adjusted to constant value 1970 soles by IIEP by index of personal consumption expenditure.
2. Year-to-year change in preceding row.
3. Table 96.
4. Preceding row divided by row 2.

Since the purpose of the reform is to change the methods, facilities, and in some cases, the location of schooling, capital costs will reflect many such changes in the years ahead. There is thus a clear limit to the usefulness of aggregative projections; but they put the future plans in the perspective of recent experience.

The Education Plan for 1971-75 projects four-year capital expenditures for the construction and equipment of new centres (Education Centres as well as Institutes for National Culture and for Sports and Recreation) at 1 602 million 1970 Soles (see Table 115). The yearly average cost is 1 900 million Soles of which 1 735 million is expected to come from the public sector. Such a figure is just over four times that which we projected above, and suggests a substantial anticipated increase in unit capital costs. It might be necessary to project capital spending during the second half of the decade of at least the same amount, considering the pace at which the nuclearization programme would continue and the new ESEP's would be added or re-equipped. If we compare such rates of capital spending to the 1970 levels (the actual level by central government was 446. 3 million Soles and not far from the average of the previous decade) the increase by 1980 is a figure compounded at 14. 6 per cent, or in 1975 compounded by 31 per cent per annum. Of course the capital spending would not be growing merely at this percentage, it would be growing much sooner. But it becomes possible to compare the budget requirements for capital with our projected growth rates for recurrent expenditure from the last section. It is clear that capital spending will have to grow faster and pull faster on finances than any of our earlier projections of recurrent expenditures, if plans are to be carried out. We recall the maximum growth rate of recurrent expenditures was projected at just over 10 per cent per annum.

It is frankly difficult at this juncture to anticipate the proportion of capital expenditures which will be contributed by financial participation of the local authorities (communities). For rural primary schools, conversations with Ministry officials suggest that this participation may provide up to one-half of the ordinary capital costs. It is estimated that in the 1972/73 school year more than 300 schools were built with this type of participation.

H. A SYNTHESIS OF ECONOMIC AND EDUCATIONAL PROJECTIONS

It may be useful at this stage to summarize the implications of the aggregative projections we have tested for the educational system and the economy and to compare their compatibility. This can be done before we turn to the additional considerations of costs of the reform process itself in the next section.

It will be recalled that in Chapter V on economic projections, we observed GDP growth assumptions ranging between 4. 5 per cent per annum and 6. 0 per cent as the likely minimum-maximum range for the decade of the implementation of the reform. Our analysis there

Table 115. Public and private investment - Education Plan 1971-1975 (S/. '000,000 1970)

	1971-72	1973-75	Total 1971-75
A. Public investment	1 487.9	5 451.0	6 938.9
1. Construction of Education Centres	498.6	2 837.1	3 335.7
- Centros de Educación Inicial	27.7	311.3	339.0
- Centros de Educación Básica	470.9	1 531.5	2 002.4
- Centros de Educación Superior	-	935.3	935.3
- Instituto Nacional de Teleducación	-	59.0	59.0
2. Equipment of Education Centres	525.7	1 741.8	2 267.5
- Centros de Educación Inicial	9.1	118.4	127.5
- Centros de Educación Básica	401.4	760.4	1 161.8
- Centros de Educación Superior	109.6	642.5	752.1
- Instituto Nacional de Teleducación	5.6	220.5	226.1
3. Construction and equipment of the Instituto Nacional de Cultura	9.1	95.9	105.0
4. Construction and equipment of the Sistema Nac. de la Univ. Peruana	403.9	571.8	975.7
5. Construction and equipment of the Instituto Nac. de Dep. y Recreación	50.6	204.4	255.0
B. Private investment	191.3	471.5	662.8
TOTAL PUBLIC + PRIVATE	1 679.2	5 922.5	7 601.7

Source: Ministerio de Educación, Perú, Oficina Sectorial de Planificación, Plan Nacional de Desarrollo para 1971-75, Vol. VIII, Plan de Educación (Reajustado), Table 2-10, Lima, 26 December 1972.

suggested that growth of public resources for current expenditure would range correspondingly between 5. 0 per cent and 5. 5 per cent. This range is somewhat less than G. D. P. growth itself because of the heavy need for government capital formation if the higher growth rates are to be achieved, and in both assumptions we posited a rate of growth of taxation which implied a tax elasticity greater than one. The heavy requirements for government saving limit the extent to which government consumption can also grow, unless, of course, even more generous assumptions can be made for foreign capital inflow. Thus the growth rate of total public sector expenditures is constrained even at higher economic growth by these extra needs of capital formation. In this chapter we have looked at the rates of growth of public expenditure on education that appear to be required by the enrolment growth projected in the Education Plan and various assumptions about salary and other cost variables. This analysis has suggested rates of growth of public expenditure on education ranging between 7. 3 per cent and 10. 6 per cent per annum for the decade of the seventies. It is interesting thus to take a look at the relationship between the economic and educational variables as summarized in Table 116.

Our economic projections put the ratio of all public recurrent expenditure to G. D. P. at or near its recent record high levels. During the sixties, these rose from 13 per cent to about 20 per cent, and it is difficult to see them growing much more proportionally. High tax elasticity will be needed to yield the capital requirements of high growth without allowing recurrent public expenditures to grow much more relative to G. D. P. (Our assumptions are shown in column 4 of Table 116. Note that the bottom row allows for an extra high rate of growth of public expenditures as an extra illustration.) Given these possibilities for the rate of growth of all public expenditures, we then test the implications of our various education projections. What proportion of all public expenditures would education absorb? (See column 3.) With any of our economic and total public expenditure assumptions, the range of our educational projections implies a higher proportion going to education than in 1970. For most of the range it would be higher than ever achieved. In the mid-sixties education was receiving about 25 per cent of the budget; by 1970 it had returned to close to 20 per cent. The range of our educational projections (7. 3 per cent growth to 10. 6 per cent) would drive this proportion to between 23 per cent and 33 per cent of public expenditures. Even at the minimum assumptions involved in those educational projections it would appear that educational spending would be driven to a record proportion of public expenditures. The question is whether this level would be intolerable, given competing claims for public funds. Similar trends can be noted for educational spending as a proportion of G. D. P., as depicted in the last column of Table 116 and compared to the previous decade. We shall summarize below the extent to which the educational and economic variables may be incompatible. In the meantime we must consider whether qualitative changes in education may have additional effects which must be added to the analysis.

Table 116. Synthesis of economic and education projection variables

	(1) Assumed annual growth rates				(2) Ratio, public sector expenditures/GDP	(3) Ratio, public educ. expenditures/public sector expenditures	(4) Ratio, education expenditures/GDP[1]
	G.D.P.	Public sector expenditures		Proj. range of public educational expenditures	1980 Implied	1980 Implied	1980 Implied
Minimum GDP growth assumption			low	7.3		23.4	5.1
	4.5	5.0			21.6		
			high	10.6		32.4	6.9
Maximum GDP growth assumption			low	7.3		22.6	4.4
	6.0	5.5			19.7		
			high	10.6		30.6	6.0
Extra high public expenditure growth assumption			low	7.3		21.6	4.4
	6.0	6.0			20.1		
			high	10.6		29.2	6.0
Actual 1970					20.1	19.2	4.4
Actual 1965					19.9	25.6	5.7
Actual 1960					13.0	20.1	3.1

1. Assumes private education sector grows at same rate as public sector, as is assumed in the Education Plan.

Source: Data from Table 14.

I. PROBLEMS OF COSTING QUALITATIVE CHANGE IN EDUCATION

With the introduction of a major qualitative change in schooling, the exercise of projecting educational costs becomes more complex and more hazardous for the analyst. The description of the educational reform in Chapter III makes clear that major qualitative changes are to be put in place on a rapid timetable - the process to be completed, if targets are met by 1980. Physical resources are to be deployed differently by means of the nuclearization process both in urban and rural areas; the use of the teaching and administrative staffs, i. e. to be organised differently at all levels. There are major curricular changes, with new emphasis on training for work and on different national and cultural outlooks in the presentation of general subjects. Different teaching methods are expected to reflect a change in teacher goals and values, and in their entire classroom approach to students. There is also to be new emphasis on the use of vernacular languages. And finally there is to be brought into being a new emphasis on general community involvement. Such a general transformation of schooling, although it depends upon community agreement and goodwill will also require the deployment and organisation of human and physical resources and the incurring of costs.

The non-capital (current) costs of reform can be broken conceptually into two parts. One part might be called the transitional costs of changeover from the old to the new system. These are not capital costs in the sense of long-lived building or equipment costs, but a flow of current expenditures which will occur only during the transition period - the industrial analogy is conversion or start-up costs for a new process. A prime example is teacher retraining, which once undertaken and completed in the intensive way contemplated for the reform, would not be necessary again to the same degree. The other part of the recurrent costs of reform, i. e. the more or less permanent shift in the level of costs associated with reform once it is in place. We might call these permanent level costs; clearly the various components of these permanent costs could shift either up or down. Some aspects of reform may be cost adding just as others are cost saving. Certain types of curricular reform, such as a heavier average emphasis on technical training would permanently raise costs, but a reorganisation of the use of laboratory facilities for natural science teaching which was more rationalised at the local level, or which economized on teacher time by raising the student-pupil ratio could permanently lower costs. What is needed here is an analysis of those cost elements which are most likely to change in either direction, with an emphasis on those which are probably most significant.

Before we look at costs themselves, it is necessary to cite a special aspect of the general problem of scrutinizing educational costs wherever the issue of 'educational efficiency' is raised even if only implicitly. Education uses scarce national resources which, like other resources in health, in agricultural development, in housing or transportation, or in other public programmes, have potential alternative value if they can be used elsewhere (the notion of their 'opportunity value' to serve public needs). Thus one would like to see resources used effectively toward national educational goals relative to the value they would have if devoted to other national purposes. If the goals or the 'output' of the educational process were observed to be constant while its costs were falling, a rise in efficiency or effectiveness in this public sector would be clearly indicated. But a reform is by definition a change in the goals (an improvement from the national point of view), and, in this instance it could be summarized as a new educational system:

- which achieves certain standards of basic knowledge of high priority for the entire population,
- which inculcates certain cultural and national values for the common citizenship,
- which provides preparation for work,
- which provides preparation for higher and/or continuing education.

There is no doubt that the sponsors of reform see it as a redefinition of the outcome of the educational process. By economic analogy there is a change in the 'product'. An analysis of shifting costs of the reform cannot in principle assess the extent to which the educational system becomes more 'efficient'.

If the product of education were unchanging and costs per student were either rising or falling, we might be able to say something direct about the relationship between inputs and outputs, to comment directly on the 'efficiency' with which public resources were being used. But where, by radical change, the educational system is presumed to be reshaping to better serve national goals, it is more difficult to say whether this change is taking place under conditions of more or less efficient use of resources. One can only suggest a taxonomy of possible outcomes depending upon the extent to which the goals of reform are generally agreed to have been achieved. Clearly, if reform results in a high rate of increase in costs per student and very little change in the effectiveness with which its stated goals are achieved, it will be a failure as far as the utilization of scarce national resources is concerned. On the other hand, if the change in costs associated with reform is moderate, and the educational system is commonly accepted to have been much more effective in meeting the goals of education, the system will be more efficient; the unwelcome rise in unit costs should not be allowed to mask that fact. There is also the likely possibility that both costs and positive educational change will rise hand in hand, an event which would make it most difficult to know whether reform was worthwhile.

Our purpose in pointing out likely change in both means and ends is to make it clear that the analyst cannot fully measure and anticipate goals in cost-effectiveness terms - certainly not at the present state of the art of educational planning. It is difficult to project likely cost changes, and even more difficult to project the extent to which the educational system will meet its stated goals.

Cost-effectiveness study and control is not impossible, however, and can be particularly useful at the level of parts of the school system.

There is a strong need for continuing micro-studies at the school or nucleo level, for the establishment of better cost standards. These will aid future costing at the aggregate level, and will also be helpful in better budgeting and better control. The new computerized central payroll system may provide a start on important comparative micro-studies of the old and the new system, to provide more accurate projection of the costs of the reform and more effective future budgetary control. Some aspects of inefficiency, such as instances of extreme variation in teacher loads, may be obvious under either system, and should come under increasing scrutiny and correction. Some categories of waste and inefficiency are self-evident and call for correction and improvement.

J. COSTS OF REFORM

It is possible to enumerate and discuss what appear to be the most important new costs associated with reform. It is, of course, very difficult to estimate the magnitude of some of these in advance of information from field experience, but we shall attempt where possible to place at least an order of magnitude estimate on their significance. Such an itemization and estimation is intended to improve our earlier projections and to help point up the areas where more information will be needed. Even if the range of error is large, we can see relative magnitudes of the various costs, and the factors which are most likely to affect future unit costs.

(i) Costs of retraining teachers

With approximately 128 000 teachers in 1971, more than 100 000 of them at the initial or basic level (not counting university instructors), there is a substantial number for potential retraining.

The tasks of retraining are many. One of the most urgent necessities is the training and provision of adequate numbers of teachers who can give vocational training and practical material in the B-III and S-I cycles, since the required proportion of these teachers will be different from the proportion now teaching or recently completing teacher-training courses in the technical areas. If the stated goal of universal bilingualism were to be accomplished by 1980, the learning of a second language by large numbers of teachers would be required. The largest goal, however, is that of reorienting and reshaping the entire outlook of all teachers. This larger goal is illustrated by one of numerous descriptions of the past teaching situation in Peru.

> "For such a reform to succeed, it is obvious that teachers will need to be changed. Many are the pure products of the old society: authoritarian, academic, incapable of reflecting upon the national reality, having only a descriptive or

> epic conception of history, compelled to judge their pupils in terms of the quantity rather than the quality of their knowledge."[1]

The same author feels that retraining can work only if there is a veritable 'social mobilization' in favour of the reform. And looking in the other direction of cause and effect, there cannot be widespread participation in the larger Peruvian 'revolution of social and economic change' without a new educational system. Present shortcomings are cited not because they are by any means unique to Peru, but because the ambition is there to make a major change; this change will require a pervasive impact on very large numbers of individual teachers.

A national programme exists at present for the improvement especially of the teaching of science. It has been organised with help from Unesco and Unicef under the administration of the Instituto Nacional de Investigaciones Educativas y Mejoramiento de la Enseñanza. One approach to retraining would be to set up similar Centres for the Improvement of Teaching offering short courses. A corps of over 400 're-educators' has already been established, to retrain teachers at the rate of about 12 000 per year in 1973.

The Education Plan projects the number of teachers rising from 1971 levels of 128 000 (about 2.8 per cent of the economically active population) to almost 200 000 (about 3.3 per cent of the economically active population) by 1980. Some 70 000 new teaching posts would have to be created, of which about 88 per cent would be in the public sector. (See Table 117.) The percentage distribution of these new posts is as follows:

Inicial	Básica	Superior	Other	Total
7%	57%	21%	15%	100%

It shows the heavy requirements of the básica and first superior cycles. The teacher-training schools themselves will rapidly become agents of different training during the decade, and a proportion of the new entrants into the teaching profession will therefore be automatically prepared for reform. But since reform methods will take time to permeate into the regular normal school programmes, even some newly added teachers may require retraining. Deaths, resignations and retirements will remove some of the 1971 teaching force, but it is clear that a large portion of the 128 000 will still be teaching at the time of total implementation of the reform in 1980.

To meet these very large retraining needs, the Education Plan calls for a schedule as shown in Table 118. From 1971 to 1980 there is a projected need to retrain 151 000 teachers, more than half in the period up to 1975 (81 500 or 54 per cent of the total to be retrained in the decade). This schedule would assure that 51 per cent of the teacher

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[1] From 'Other schools for the Third World' by correspondent Charles Venhecke, Le Monde, 31 July 1973.

Table 117. Plan estimate of teaching force to 1980, public + private sectors ('000 teachers)

School level	1971	1975	1980
Regular			
Inicial	2.2	5.1	7.1
B I + II	67.9	76.4	79.3
B III	21.0	26.1	38.6
Laboral			
B I + II	6.5	10.4	13.9
B III	5.6	7.7	9.7
Superior			
S I	9.6	14.1	22.4
S II[1]	12.5	13.3	13.8
C. P. E.	2.2	4.8	12.2
Special Education	0.4	0.8	1.1
Total of which:	127.9	158.7	198.1
public	107.7	134.5	170.0
private	20.2	24.5	28.1

1. Non-university superior level.

Source: Peru, Ministerio de Educación, Oficina Sectoral de Planificación, Plan Nacional de Desarrollo para 1971-75, Vol. III, Plan de Educación (reajustado), Lima, June 1972, Table 2-08.

Table 118. Plan retraining requirements for teaching force 1971-80 ('000 teachers)

School level	1971	1971-75	1975-80	Total 1971-80
Regular				
B I + II	3.8	63.6	14.5	81.9
B III	-	1.8	30.9	32.7
Laboral				
B I + II	0.2	7.8	-	8.0
B III	-	5.0	6.1	11.1
Superior				
S I	-	3.4	18.1	21.5
Total	4.0	81.6	69.6	155.2
Average per year	4.0	20.4	13.9	-
Average 1971-80			16.8	

Source: Peru, Ministerio de Educación, Oficina Sectoral de Planificación, Plan Nacional de Desarrollo para 1971-75, Vol. VIII, Plan de Educación (reajustado), Lima, June 1972, Table 2-09.

force was retrained by 1975, much of it, of course at the básica level. The Plan calls for the proportion to be brought to 76.3 per cent of all teachers by 1980, the rest having received their new training during regular normal school programmes. The Plan points out that the activities and new policies of the reform will require the training and improvement of auxiliary and administrative personnel in addition to teachers, though these are not included in Table 118.

We can estimate the costs of retraining by using Plan estimates of the number of teachers involved. To make an allowance for retraining of administrative personnel, we note that the 1970 Educational Census put the number of these at about 15 500[1], or about 12.5 per cent of the teacher force. Assuming that only half of administrative personnel requires retraining, we can assume the following average numbers would be candidates for retraining each year for the time periods shown:

1971	1971-75	1975-80
4 300 per year	21 300 per year	14 800 per year

One approach to costing retraining is to relate the costs to those of training teachers in normal schools. If one used as a 'high' allowance the unit costs for a full year of normal teacher training, these would amount to roughly S/. 12 000 for the five-year average of the period 1968-72.[2] That would be indeed a high allowance, but not an exaggerated one for a major transformation of the entire teaching force. Reshaping of teacher attitudes and methods, training in a second language, provision of new curricular material in the practical areas for a much larger proportion of teachers originally trained in arts and science, and establishment of courses in teaching methods for those brought into teaching from industrial or agricultural backgrounds, could require resources of at least that order of magnitude. Using this figure we find that costs during a period of average annual retraining of 21 300 teachers up to 1975 would require S/. 256 million per year, or about 2.92 per cent of the 1970 recurrent educational budget. At the lower rate of retraining in the latter half of the decade, the costs would be S/. 178 million, or 2.06 per cent of the 1970 total budget.

If these costs, equivalent to the average unit costs for teacher training in 1970, are thought to be too high, the assumption of half that rate would yield annual recurrent retraining costs of roughly 1.5 per

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1. See Table 119 below.
2. It is necessary to take a five-year average, because as Table 49 above shows, numbers have fluctuated strongly. Enrolments in normal schools have dropped 50 per cent, and total costs have fallen, and then risen, with the result that the 1970 Soles value of teacher-training unit costs has been (in S/.'000) 14.5, 10.3, 10.1, 10.1 and 14.4 for the five years 1968-72.

cent of the 1970 total educational budget level until mid-decade, and about 1 per cent for the last half decade.[1]

As a second approach to estimating retraining costs, we follow up the fact that a force of 420 re-educators is expected to retrain about 12 000 teachers per year as the programme gets under way in 1973. For the entire period 1971 to 1980, we calculate about 16 000 teachers per year would need to be retrained. An annual average of 590 re-educators would be needed to maintain the same ratio (35/1). Such a retraining teacher force would be over half (55 per cent) of all those teaching in the normal schools in 1970.[2] We might then anchor our cost projections to the recurrent expenditures per faculty member in the normal schools, treating costs of retraining as equivalent per teacher to those in the normal schools. Again we will average the period 1968-72. Total normal school budgets fluctuated between S/. 192-156 million, falling from a peak in 1968 and rising again, but the average adjusted in terms of 1970 Soles is S/. 167 million.[3] Multiplying by 55 per cent yields S/. 92 million or just over 1 per cent of the 1970 recurrent total educational budget. This is a much lower figure than our earlier one because it posits a much higher student/teacher ratio in the retraining effort.

We obviously cannot expect accuracy in projections of retraining costs. Results depend very much upon what it is thought will suffice for the job. Assuming that the job is the equivalent of about one year of teacher training for each teacher undergoing retraining, it would be a load on the educational budget of about 3 per cent of the 1970 level. Assuming that it is closer to what can be done at the present rate of 420 re-educators per 12 000 teachers, each of whom costs about what a teacher in the normal school does, it would be about 1 per cent. It is also possible to conceive that this aspect of reform will require more or less resources than this range. We believe that nothing less

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1. In order to relate various costs of the reform to one another in the analysis that follows in this section, we will try as often as possible to specify all costs in terms of percentages of the 1970 budget level. This makes it easy to guage implied growth rates on the 1970 base, as was done in the immediately preceding section, and at the same time easy to compare one cost with another. Of course teacher retraining costs are transitional to be completed by 1980, as we are presently treating them, and would be 'phased out' by 1980, but it is interesting to compare their magnitude with other costs analysed below which are more in the character of new permanent level costs.
2. Perú, Ministerio de Educación, Oficina Sectoral de Planificación, Plan Nacional de Desarrollo para 1971-75, Vol. VIII, Plan de Educación (reajustado), Lima, June 1972, Table 1-02. There were 1 075 teachers in the normal schools in 1970.
3. From Table 49 above we calculate the normal-school expenditures in 1970 Soles at: 1968, 215 million; 1969, 173 million; 1970, 156 million; 1971, 130 million and 1972, 161 million.

than the larger figure would approach a real transformation of the large stock of teachers with their present training, but even if that opinion is accepted, it may as a strategy be better to approach that degree of retraining over a longer time period than to 1980.

Conversation with Ministry of Education officials in March 1974, suggests that the rate and method of teacher retraining is about in line with the more modest goals of the cadre of 420 re-educators training during the teachers' three-month school holidays. The teachers follow the training programmes during this period, each three-month programme being devoted to one of the basic educational cycles. The teacher is considered to be 'updated' once three refresher courses have been completed. The entire costs of the training are represented by the salaries of the retrainers, who are attached to the staff of the regional administration, and whose salaries are already included in administrative expenditures. Earlier plan estimates may have overstated the number of teachers needing retraining relative to these modest goals, and actual retraining costs may at the moment be approximating a figure less than that which would produce a 'transformation' of teachers in a short period of time.

(ii) Costs of regional dispersion of universal basic education to remaining unschooled segments of the population

Much of the growth of schooling during the past decade has accompanied the strong urban migration of population in Peru as in many developing countries. Although rural education has also expanded, a relatively larger share of expansion has occurred in urban surroundings. If basic education is to be extended under reform to the last 25 per cent of the normal age cohort, not now being schooled, a much larger percentage of this effort will take place in more remote and more rural areas.[1] The task of nuclearization, especially designed in some of its forms to deal with rural areas, will be to provide education under conditions of greater geographic space and lower population densities. Unless the objectives of rural education are to be different from urban ones, expansion will be more costly in remote areas than it was in the more urban setting. Discussions in the field suggest that nuclearization might proceed with target pupil/teacher ratios of about 30/1 under ordinary circumstances but with ratios as low as 12/1 in remoter areas of the Selva and the Sierra. Even if it were assumed that the last 25 per cent of the population could be brought into the school system at a pupil/teacher ratio of 20/1 costs would be 50 per cent higher than normal for that segment of the schooling. As a rough determination of the order of magnitude, if we assume that one-quarter of the 1970 schooling budget for the grades one through nine were subjected to a

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1. It may be helpful here to reconsider Chapter II, Section J above, for a discussion of regional educational characteristics.

50 per cent increase in costs, the 1970 total recurrent educational expenditures would rise by about 6. 7 per cent.[1] Even this rough calculation goes at least part way toward determining the costs of geographic spread, since the apparent enrolment ratios for the country as a whole, were not far off the 1980 targets for universal education. The over-age group was offsetting the non-schooled, and the latter will largely displace the former during the decade of the seventies.

(iii) Costs of preparation of new curriculum and teaching materials

Material preparation costs, particularly the preparation of new texts, classroom materials, teachers manuals, and the central development of laboratory and workshop materials, can be borne partly by efforts at the national level, although some development will no doubt occur at the nucleo or even the classroom level. We have noted previously the low material costs in the budgets for education. Officials explain that the costs of such materials are largely raised at the local level, and thus escape the national budgeting process. Since the reform intends to improve all aspects of the learning process, material provisions will have to be increased. Their lack has been a widely recognized inadequacy, but important as they are, the magnitude of their costs, especially preparation costs, will be small relative to other costs of the reform.

(iv) New administrative costs at the nucleo level

It is anticipated that much of the manpower requirements of the nuclearized schools will be provided by the re-allocation of existing personnel into new and differently defined functions. Nonetheless it is possible that the more effective management of schooling at the local level will require net additions of administrative personnel. Nuclearization calls for a three-year term for the Director of the Nucleo, and a fixed term for the Directors of each of the Educational Centre, including the Director of the Base School, who may occasionally deputise for the Director. Persons with teaching backgrounds are to be chosen for each of these posts. After their fixed terms expire they are expected to return to teaching. In addition, at the local level the Administrative Support Unit (Unidad de Apoyo Administrativa) and the

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[1] The calculation assumes that data from: Peru, Ministerio de Educación, Oficina Sectoral de Planificación, Plan Nacional de Desarrollo para 1971-75, Vol. VIII, Plan de Educación (reajustado), Lima, June 1972; Table III. 13 are adjusted as follows: Primary expenditures are increased by 12. 5 per cent and Secondary expenditures are increased by 6. 25 per cent, i. e. one-quarter of grades 1-6 and one-eighth of grades 7-12 subjected to a 50 per cent increase.

Team for Educational Promotion (Equipo de Promoción Educativa) will perform specialized and professional tasks of administration, planning, implementation, community promotion, school mapping, etc. Even if the net impact of nuclearization were to add the equivalent of only three persons per nucleus on average for the country, the 2 700 additional administrative personnel (assuming about 900 nuclei) would be a large number relative to existing levels of administrative personnel, an increase of over 35 per cent. Table 119 shows the 1970 levels of administrative and service personnel.

Of course, other aspects of nuclearization may result in sufficient economies in the use of teachers or other personnel that manpower may be released for these tasks, but unless this happens local administrative costs are a likely new element of cost with the reform. The increase in costs could range from zero to 1.4 per cent of 1970 total recurrent costs of education, as new administrative costs ranged from zero to a 35 per cent increase.

(v) Changes in administrative costs at the national and regional levels

The impact of reform on educational administrative costs at national and regional levels is difficult to predict. Decree No. 18 799 of March 1971, dividing the country into nine educational regions, each of which contains several zones (a total of 33 for the country), was an attempt to re-distribute administrative functions and decentralize operational control of schools. The objectives are to make education more attentive and responsive to regional and local needs, to make administration itself more effective and efficient, to improve administration by making financial control more effective, and to improve short-term, intermediate, and long-term planning functions. In the re-designed administration, global functions such as macro-planning, educational research, aspects of curriculum development, supervision

Table 119. Administrative and service personnel 1970

Level	Administrative	Service
Primary	1 658	2 182
Secondary general	4 736	4 257
Secondary technical	967	811
Total	7 361	7 250

Source: Peru, Ministerio de Educación, Oficina Sectoral de Planificación, Plan Nacional de Desarrollo para 1971-75, Vol. VIII, Plan de Educación (reajustado), Lima, June 1972, Table 1-03 from Censo Nacional Escolar 1970.

and judicial affairs, and general development of educational policy, would be lodged in the national administration. It would also play a consultative and co-ordinating role, through directorates (Direcciones) corresponding to each of the educational levels - basic, superior and extension - and through the Office of Planning and of Supervision and Judicial Affairs.

The function of the regional authorities is to supervise the functioning of the teacher-training institutions in their areas (with the exception of the universities), adapting the norms established at the national level to the specific characteristics of the region. They also carry out the planning, direction, co-ordination, and supervision of all educational activities in the region by means of the administration of both personnel and physical and financial resources of the region. The authorities at the zonal level are organised in similar fashion but subordinate position. A corresponding administrative structure exists thus at the three levels, central, regional and zonal, each unit answering to the level above.

The long-sought administrative decentralization is to correct what was recognized as the growing inefficiency of concentrating the entire administrative apparatus in Lima. Long and difficult communication lines, even just in terms of travel time, and the need for local officials to spend excessive time presenting their case in the centre produced a wasteful and unresponsive administration for a large country with a rapidly growing educational system.

Many functions will continue to be centralized, such as the new computer payroll system. If total administrative costs are not to rise relative to student numbers or other educational costs, central administrative functions must be diminished relatively as administration at the local level increases. Since there will be substantial growth in the educational system as a whole over the next ten years, if central administrative personnel numbers are held relatively constant or in low growth, relatively higher growth is allowed at the regional and local level, total administrative burdens relative to student and total budget magnitudes can be kept from rising.

(vi) Special recurrent costs of technical and vocational training in the basic programme and ESEP's

The basic third cycle programme, grades 7-9, is considered the keystone to educational reform at the universal schooling level. In it, the focus on semi-qualified worker status is to be provided along with enough general studies exposure that the total academic content will be the equivalent of the previous system's grades 7-11. Its functions would typically be centralized in the base school; and the special facilities of science laboratories, workshops, libraries, and physical education would generally be grouped there. Such facilities would also be available at night for the use of laboral programmes. It is difficult to estimate the exact impact of such programmes on recurrent budgets.

One estimate is that as much as one-fourth of the students' class time would be devoted to science and practical training, with an appropriate proportion of the teachers so involved. Such teaching is generally possible only with fairly low pupil/teacher ratios. Some pilot projects for the B-III cycle have projected a 24/1 pupil/teacher ratio.

At the level of superior first cycle, the ESEP's are the instruments of the conversion to technical training from the old second-level system, one of the most innovative characteristics of the reform. Offering specialization in teacher training, industrial arts, commercial, basic service, and agricultural studies, along with general studies, the programme is to provide terminal qualification for immediate employment related to the needs of the economy and society. The programme is to be at a higher level than secondary education, and is to answer neither to the descriptions of traditional vocational education nor narrowly to university admission requirements, although it is to be a prerequisite for the latter. The extent and type of specialization offered in different localities is to depend upon local needs, especially economic needs; thus some ESEP's are to offer relatively more industrial arts geared toward the needs of the mining industry, others to fishing and fish product processing, others to agricultural technician training, and others to electricity generation. There will be a heavy national emphasis on agriculture training, commercial education (related to special needs such as those of reforming and commercializing agriculture), and basic services such as social work, tourism, and paramedical practice. Pilot planning projects have assigned general studies roughly 25-30 per cent of each student's time and specialized study 70-75 per cent, so that substantial portions of student time are to be spent in laboratories, workshops, agriculture and supervised field work. Such a programme requires substantially more equipment and current materials than old second-level programmes, and probably somewhat lower student/teacher ratios. Pilot proposals have been set at a ratio of 22/1, higher than the levels in second-level education in the sixties but somewhat below the much more economical levels of recent years. In 1970-72 the average student/teacher ratio at second level had risen to 24/1.

Without detailed experimental cost data based on field experience, it is difficult to guess how much the B-III and S-I cycles will raise unit recurrent costs. On the basis of fragmentary descriptive evidence so far available to this author, unit recurrent costs for these cycles may be estimated to rise between 25 and 50 per cent over their 1970 level[1], perhaps more. Table 120 presents a comparison of the difference between unit costs in general secondary education and technical secondary education for the public sector in the last five years to 1972.

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[1] Such a range of increase in unit costs applied to grades 7-12 of total 1970 recurrent educational expenditure raises the total between 5.4 per cent and 10.8 per cent.

Table 120. Comparison of unit costs of general and technical public second-level education

	Public Secondary General				Public Secondary Technical			
	Total recurrent expenditures ('000,000)				Total recurrent expenditures ('000,000)			
	Current Soles	1970 Soles	Enrolments ('000)	Unit costs 1970 Soles	Current Soles	1970 Soles	Enrolments ('000)	Unit costs 1970 Soles
1968	1 473.9	1 321.5	387.8	3 408	685.5	590.4	88.2	6 694
1969	1 538.2	1 464.7	404.7	3 619	584.5	556.6	93.4	5 959
1970	1 399.7	1 399.7	443.3	3 157	553.6	553.6	122.4	4 523
1971	1 498.9	1 599.3	574.3	2 788	547.9	584.6	142.2	4 111
1972	2 204.4	2 524.7	618.2	4 084	814.7	933.1	170.4	5 476
5-year average				3 411				5 353

Source: Expenditures - Ministerio de Educación, Oficina Sectoral de Planificación, El Financiamento de los Gastos de Educación en el Perú, 1960-72, Tables III.2.1 and III.2.2, include an allocation of administrative costs to second level.

Technical education in those years was quite different, but not necessarily more expensive, than that to be provided under the reform. It averaged almost 60 per cent more than general education.

(vii) Salary costs due to the upgrading of the average teacher qualification

When a country such as Peru is in the process not only of expanding education but of upgrading the quality of the teaching force, there is an extra effect on the growth of recurrent costs which is independent of the rise in numbers of teachers. This growth is also independent of the transitional costs of retraining existing teachers for the new methods and subject matter of the reform curriculum. It is simply the result of the higher average placement of the teaching force on a salary scale which is strongly sensitive to teacher qualification. As Chapter II showed (see especially Tables 33 and 43), average teacher qualifications were improving rapidly in the sixties. Rapid growth of teacher numbers, the outpouring of the expanding normal schools, contributed to this major increase in average qualifications.

The salary scale which went into effect in April 1973 continues a salary policy of substantial differentiation according to qualification. Table 121 shows recently published data. The range of variation of salary by qualification is about 45 per cent. This range might be modified slightly taking into account other salary items that are added to the base. Allowances for years of service are percentages of the base and would not affect the range. Other salary items are family allowances (35 per cent of the top grade pay of S/. 30, 000 per month for each dependent), Christmas bonus (in 1973 a flat S/. 1 200 for all teachers), and extra pay for service 'on the frontier', 'at high altitude' (above 3 000 metres), and in 'less-developed regions'. These allowances earn points usually worth between 1 per cent and 5 per cent of top grade pay. Many of these items which are not computed on the

Table 121. 1973 base teacher salaries (1973 Soles)

	Base monthly salary	% of category III salary
I	7 800	145
II	6 600	122
III	5 400	100

Source: Perú, Decreto Ley No. 19 848, Fijan escala porcentual correspondiente a grados y sub-grados que regiran durante el período 1973-74, Lima, 26 December 1972.

base may reduce the salary range somewhat, but other factors like extra pay for special services may be positively correlated with qualifications.

In any case it is possible to estimate the effects of upgrading teacher qualifications on the total salary bill (see Table 122). Starting with the proportions of teachers in each of the three qualifications in 1970, we apply two different assumptions. For our first projection, we assume that the proportion of first-category teachers continues its past rate of growth, rising from 55 per cent to 70 per cent by 1980, the proportional reduction taking place largely in the third category. For the second, we assume that the first category rises to 75 per cent.[1] These are not unreasonable assumptions considering that the teaching force will almost double in the decade, and many more qualified teachers will replace those resigning or retiring during the seventies. Under the first assumption the salary bill would rise by about 6 per cent and under the second assumption by about 7 per cent, simply because of the improvement in average qualification and the salary distribution in the 1973 scale.[2]

This effect is, of course, additive to those effects resulting from the rise in total number of teachers, or from across-the-board salary increases. By way of illustration, if the teaching force were to remain constant over ten years, this upgrading phenomenon by itself would add 6-7 per cent to the 1970 salary bill; but if the teaching force were to double, this factor, according to our assumptions, would add 12-14 per cent to the 1970 salary bill. It is not an insignificant contributor to possible future cost increases.

A factor of a similar kind, if not in magnitude of impact on the salary bill, could be a shift in the age and seniority structure of the teaching force. As we have seen earlier, the salary scales have an allowance for pay increases which would average one per cent for each year of service. Since the teacher force has already been growing rapidly for a long period of time, it does not appear that there will be a substantial shift in age structure such as to make this factor comparable to that of teacher qualification. It is true that more than half the teachers in

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1. Our assumption of 75 per cent is not likely to be too high by 1980. Although the 1970 Educational Census puts the number of first category teachers at 55 per cent, there is evidence that the proportions are already increasing quickly. One source reports that by 1973 the first category has already increased to 63 per cent. See, for instance, in El Peruano, 3 January 1973 the article 'Titular de educación formulo exposición a la prensa sobre remuneraciones a docentes', which authoritatively reports teacher categories as:

First category	63 per cent
Second category	7 per cent
Third category	30 per cent

2. These calculations come from the last two columns of Table 122.

Table 122. Projected teacher qualification - impact of changing structure on public school, salary costs

Category	1970 teaching force	% of respective totals	1970 salary bill relative	1980 salary bill relative Assumption I	1980 salary bill relative Assumption II
Category I					
Primary	36 679	55.2			
Secondary	15 961	54.1			
Total	52 640	54.8	(54.8)(1.45)X	(70)(1.45)X	(75)(1.45)X
Category II					
Primary	3 920	5.9			
Secondary	4 277	14.5			
Total	8 197	8.6	(8.6)(1.22)X	(8)(1.22)X	(8)(1.22)X
Category III					
Primary	25 849	38.9			
Secondary	9 248	31.4			
Total	35 097	36.6	(36.6)(1)X	(22)(1)X	(17)(1)X
Grand Total					
Primary	66 448	100.0			
Secondary	29 486	100.0			
Total	95 934	100.0			
Salary bill relative			126.6X	133.8X	135.8X
Index 1970 = 100			100	106	107

Note: Salary bill relative column: the first factor is 1970 actual, 1980 assumed, percentage of teachers at each category level; the second factor is the proportion which each higher category (II and III) base salary is of lowest category III base salary (X).

Source: IIEP data on teaching force from Tables 33 and 43 above.

1980 will have been added during the decade, but this was the case in 1970 as well.

K. FINANCIAL GAINS OF THE REFORM

Fortunately the reform holds some promise of cutting costs of education. It is important to consider the more significant possibilities, even though they may be somewhat less tangible and more difficult to quantify than the cost increases. Further experience will provide evidence to the extent to which these factors are significant.

(i) Gains from more efficient use of resources under nucleo system

It is anticipated that the establishment of centrally located facilities such as workshops, laboratories, libraries and sports facilities will save resources within each nucleo. Rational location and centralized management of such facilities are likely to be especially important in rural areas, where distance is a bigger factor in costs. Increased usage is also anticipated for facilities serving B-III programmes during the day and laboral programmes at night. Similarly, the regular use of ESEP facilities can be co-ordinated with night-time use in CPE worker programmes. Certainly there is much opportunity for this kind of rational school mapping for the use of scarce facilities. The organisational structure of the nucleo, a centre of co-ordination and direction at the local level, is designed to bring these benefits.

(ii) Gains from drop in grade repetition

A potential saving can be attained if a substantial reduction in grade repetition can be achieved by the reform system of automatic promotion. The accumulation of dossiers which chart the achievement of the individual students and match programmes to their abilities is expected to do this. If the methods of reform can achieve similar or superior educational goals without repetition, then there is a pure gain. We have noted that repetition accounted for as much as 16.5 per cent of grade enrolments in the public primary system in 1970, and 9.3 per cent in public secondary education. Any factors which cut these rates would produce large savings. If each repetition rate were cut in half, for instance, the 1970 public costs for primary and secondary education, if they were reduceable by an equivalent amount (reduction of student numbers times 1970 unit costs), would have been lowered by 7 per cent.[1]

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[1] Calculated as saving 8.25 per cent of the 1970 primary recurrent expenditures, and 4.6 per cent of the secondary recurrent expenditures, where those expenditures were 4 000 and 1 953 million soles, respectively.

To be able to effect such a cost saving on the large future growth of enrolments as well, would be an important accomplishment.

(iii) Net gains from the system of civil service of graduates

The scheme of a civil service for graduates, whereby those getting their degrees are to work for the state for a period of up to 14 months, could produce entries on both sides of the ledger of costs and gains from the reform. We hope that the gains will be greater than the costs. Essentially the elements of cost versus benefits of the programme are as follows:

	Costs		Benefits
1	Administrative costs of programme and its National Office		Tangible
2	Specific training costs	4	Value of services rendered which would otherwise be paid for
3	Payments and allowances made to graduates		Intangible
		5	Nationally desired values acquired by the graduates
		6	National services rendered that would not otherwise be paid for

Not counting intangible items 5 and 6, which may, like general educational values themselves, be worth public expenditure in their own right, the Civil Service for Graduates programme will reduce or add to costs depending upon whether tangible benefits, item 4, is greater or less than the three cost items. Such graduates might serve as potential replacements for some teaching and other manpower active in community development, agricultural development, and other economic and social projects in the public interest. Without detailed study one can only speculate on the cost of such service on the basis of experience with similar programmes in other countries. It seems unlikely, according to the narrow category of the tangibles, that the programme would pay, i. e. save public expenditure. Even though the graduates might be willing or compelled to work at low salary and/or allowances for living costs, the training, administration, placement, co-ordination, evaluation, and termination activities of such programmes are likely to be more costly than the price at which comparable services could be obtained on a more permanent or long-term basis, particularly where the national service of the graduate is to last little more than one year. Citing the costs is not meant to render a judgement on the value of such programmes but simply to point out that their important larger values may be available only at a tangible cost, perhaps similar to an extension of the educational process itself. Since the numbers of students potentially involved in such programmes is very large, they will become an important area for more careful costing as planning experience is gained.

(iv) Gains from reform design reducing 'redundant' enrolment at a higher level

One of the criticisms of traditional education is that it has not prepared students for work, and that with its heavy academic and abstract emphasis it has produced candidates who simply enrol for more education. This criticism is difficult to analyse for it goes to the very heart of the question of the values of education. It is argued that much of the expansion of higher education was a response to this more-education-or-nothing-to-do character of primary and secondary education as it has existed in the past. If the reform has the effect of adequately meeting the general education requirements of society, while more effectively preparing students at each level for immediate entrance into productive work, one of the cost savings will be avoidance of the 'unnecessary' provision of more education at higher levels. The advantages are obvious, provided the technical education under the reform does in fact lead to provision of skills needed directly in the economy and society.

We must at least note in passing that formal technical education as it has been tried in many developing countries has not earned high recognition as an effective educational form. It has been a controversial substitute for either general education or for mixtures of general education and on-the-job training. Its critics would say that technical skills are often 'supply-elastic' - that is, that where the needs exist job training and occupational promotion campaigns can provide the skills, and that formal vocational schooling has not been a conspicuously adaptable and successful source of matching new skills with new needs. One answer to such criticisms is, of course, to produce not just *more* technical and vocational elements in general schooling, but to see to it that they are better matched with skill requirements of the society. Another difficult kernel question is whether formal technical schooling can teach skills, whether it can even give students valuable conditioning experiences such that on-the-job training (which inevitably follows) is sufficiently more effective to justify the costs of public training.

Those who caution against over-reliance on formal vocational training seem either to believe in the superior long-run value of general education, or in the more effective placement of vocational training function closer to the job performance experience itself. The Peruvian educational reform's emphasis on bringing schooling closer to the rest of the community, including industries and potential employers at the local level, is an important attempt to improve communication between local needs and local training methods. One might be optimistic that the Peruvian reform could produce better results. Some of the standard difficulties which are too often seen as a part of formal vocational training will have to be overcome if the reform is to be successful in this respect.

If one believes in the value of general education and feels that all increments of it (i. e. more student years of education in the society) are of continuing value to the society, then no 'cost-saving' can result from inhibiting higher enrolments. However, one cannot take a purely doctrinaire view of these matters. It is certainly possible that the provision of very large amounts of higher education can lead to conspicuous over-training, 'high-level unemployment', and the use of public resources which could have higher value in meeting other social needs. The reform appears to be a worthwhile compromise in this respect. The Educational Plan calls for a reduction in the rate of growth of enrolment at the university level to about that of population growth, so that age-specific enrolment ratios are to be in 1980 about what they were in 1970. That is a very different picture from the high growth rates of the sixties. On the other hand (see Table 99 above), enrolments at the S-I level in the ESEP's are projected to rise so rapidly that the enrolment ratios at that level will rise from 18 per cent to over 45 per cent in the ten-year period. This is a growth of technical and vocational training which is very high indeed. If this entire output were trained professionals, the numbers would be very high relative even to current European experience. However, if large numbers of ESEP graduates are at the level of technicians, or simply potential employees more readily adaptable to specialized training for intermediate manpower needs, the numbers may not be too large.

The enrolment ratios at the grade levels equivalent to the B-III programme leading to semi-qualified worker status are expected to rise from about 41 per cent to 72 per cent. To the extent that the B-III programme takes pressure off the social demand for enrolment at the old second level by preparing those who find work as an alternative to schooling, and who have received adequate general education, there is a saving of what, under the old system, would have been additional second-level education costs. S-I enrolment ratios are projected at less than 50 per cent, perhaps this proportion is lower than what would have occurred under the old system.

To the extent that the S-I programme takes pressure off the social demand for higher education, by adequately preparing technicians and professionally (vocationally) qualified persons who find work as an alternative to higher education, there is a saving of what, under the former second-level education system, might have been higher university level costs.

Given the progressively higher unit costs of all forms of higher level education, the reform's aim of breaking the pattern of nothing-to-do-except-more-education is its most important potential cost saver. For this cost saving to be realized, of course the reform must produce successful preparation for work and more successful integration of students into the further experiences of the life-long educational and training process. If it can blunt the social demand for more formal education, savings could be large relative to many of the increased cost elements we have identified.

As a rough determination of the magnitude of this element of potential saving, we can follow a procedure similar to that used above to estimate the possible saving from reducing the repetition rate. Using 1970 as a base year, each one per cent of that year's enrolment at the second level would account for 0.216 per cent of total recurrent expenditure on education, and each one per cent of that year's enrolment at the higher education level would account for 0.131 per cent.[1] Let us suppose that reform keeps enrolments at the second level growing at about 350 per cent over the decade, as the Plan allows, instead of 450 per cent, and at the university level at 40 per cent, as the Plan allows, instead of 150 per cent. The savings level in 1980 expressed as percentage points of total 1970 recurrent educational expenditure would be 36 per cent (100 x .216% + 110 x .131% = 36%). This is a substantial amount relative to other potential costs and gains we have considered. The assumptions are illustrative only, and are necessarily arbitrary. One might wish to choose other, higher or lower assumptions.

L. COST SENSITIVITY SUMMARY

Although we risk giving our figures the appearance of exaggerated accuracy, we shall present in this section a summary of the cost sensitivity of the major elements of potential cost change that have been identified. We emphasize the warning that it is not possible simply to add these items and make a net judgement on future costs. As the reform is implemented, careful gathering of field evidence from school mapping and other micro-planning techniques aggregated to the national level will eventually provide the best estimate of the cost of the reform. Since the authors of the reform were more interested in changing the educational system and its entire effectiveness relative to national goals, it was not especially designed to affect costs. But since the allocation of scarce public resources will ultimately determine what can be accomplished, the impact of cost is important. It may thus be helpful to summarize the likely magnitudes as best as we can. This exercise may also serve the purpose of suggesting what additional information may be required for planning purposes.

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[1] Peru, Ministerio de Educación, Oficina Sectoral de Planificación, El financiamiento de los gastos de educación en el Perú, 1960-72, Lima, 1973, for IIEP/Unesco, Table III-13.

Sensitivity of costs of reform

Item and assumption	Approximate annual cost as % of 1970 recurrent educational expenditure
Costs	
Teacher retraining costs:	
- related to normal school costs (see text)	3.0 per cent 1971-75 only 1.5 per cent 1975-80 only
- related to re-educator costs (see text)	1.0 per cent 1971-80 only
Geographical dispersion costs of universal basic education	6.0 per cent to 7.0 per cent
Preparation and better provision of new teaching materials	less than 1 per cent
New administrative costs at nucleo level	0 per cent to 1.4 per cent
New administrative costs at national and regional levels	(+ or -) ? possible offset to previous item if reduced
Special costs of technical and vocational education components	5.4 per cent to 10.8 per cent
Salary costs due to upgrading average teacher qualification	6.0 per cent to 7.0 per cent
Gains	
Gains from economizing resources under nucleo system	(+ or -) ?
Gains from reduction of repetition if rate is halved	7.0 per cent
Net gains from civil service of graduates	(+ or -) ?
Gains from reduction of 'redundant' enrolment at higher levels	0 per cent to 35.0 per cent

Using our high cost estimates for a hypothetical figure, if the reform had been put in place instantaneously in 1970, ignoring teacher retraining costs and assuming administrative costs at the national and regional level had remained constant, the analysis suggests that the level of costs might have been between 25 per cent and 33 per cent higher than it was. It is unlikely that the items ignored or those on the gains side of the ledger, with the exception of the item covering redundant enrolment could have offset these cost increases. The ability to offset the rises will depend most critically on control of salary policy and administrative costs, and to a much lesser extent, we believe, on organisational efficiency in the use of resources at the local level. Since so much of resources goes into salaries, and apparently pupil/teacher ratios are not going to change significantly, the organisation of other physical resources, though important, is not apt to be a big factor in total costs. The most likely offset would be a reduction in grade repetition, a significant current cost. Therefore, we conclude that it is highly likely that unit costs will rise significantly with the reform.

The largest potential offset to the increase in unit costs is the reduction in enrolment that a successful reform would provide at the expensive higher levels. We assume that this factor is already being taken into account in the Plan projections of enrolments to 1980; so it is a 'saving' only in relation to what those enrolments would be (i. e. higher from extra pressures of 'social demand') without the reform. Thus if unit costs of education were to rise somewhere between 25 per cent and 33 per cent because of the qualitative changes of reform, higher enrolments would add at least another two percentage points, possibly more, to the annual rate of growth of recurrent educational expenditures in the period up to 1980. Something of this order of magnitude would need to be added to the aggregative factors already discussed in our earlier section.

Although we expect the reform to be available only at a higher cost, we must return to the discussion at the beginning of this section and point out that if the very effectiveness of the educational system is improved and if it meets its stated goals, the extra cost may be more than justified relative to other national needs and priorities. The purpose of estimating costs of education is to assist in the attainment of these goals, not to detract from their ultimate importance. Because the Peruvian experiment is widely known and admired for its attempts to deal boldly with defects that plague school systems generally, it will be widely watched for its future accomplishments.

M. SUMMARY AND CONCLUSIONS

Our conclusion is that both the goals of enrolment and of qualitative reform will cause educational expenditures to rise rapidly in the years to the end of this decade if targets are to be met. Our costing of Plan enrolment goals, combined with teacher salary unit costs growing at a rate about equal to that projected for per capita Gross Domestic Product, produces a rate of growth of public recurrent expenditure of education on the 1970 base at more than 10 per cent per annum for the period to 1980. If we add a couple of percentage points as a minimum allowance based upon the costs of reform which we have analysed in the previous section, we see growth requirements running as high as 12-14 per cent per annum for the rest of the decade if the objectives of the reform are to be achieved within that period. Recalling the synthesis of Table 116 above, which made no special allowance for extra costs of the reform, such growth rates would push education expenditures to between 35 per cent and 40 per cent of public expenditures, given the range of economic assumptions. Only strong combinations of favourable factors could reduce these requirements, but we see no present evidence that these will occur. Such a growth rate for educational expenditures would be almost double that which we foresee for public expenditures generally on the basis of our economic models of Chapter V, and certainly would be in excess of the most optimistic conceivable projection for the economy as a whole.

It is perhaps ironic that recent trends have, if anything made the goals of matching educational demands and costs seem even more difficult to attain. The discontinuously large recent increases in teacher salaries, though perhaps justifiable on grounds of national purposes, have already had the effect of raising costs well above the 1970 levels, in advance of the actual start of most of the reform. The 1973-74 biennial budget for public expenditures[1] shows educational expenditures at 28.3 per cent of all public operational expenditures (S/.25.2 out of a total budget of S/.89.3 thousand million). This proportion exceeds any since the mid-sixties, and is well above that of 1970. (According to Table 82 above, the 1965 percentage of total public recurrent expenditure was 24.8 per cent; in 1970 it was at a recent low of 18.8 per cent.) Capital expenditures are also planned at levels much higher proportionately than in recent years, 3.2 per cent of the public capital budget in 1973-74, up from 1.8 per cent in 1970, but not as high as the 6.1 per cent of 1965 (see Table 83 above).

There is some evidence of the repetition of an earlier pattern in the rapid shifts of the budget proportions, undoubtedly related to the delayed response to inflation. Inflation continuously and inexorably erodes fixed salary scales such as those of teachers, and an adjustment, when it comes, is partly 'catching up' and partly 'getting ahead' in real terms relative to the rest of the economy. If Peru's significant inflation continues, moderate as it is by comparison with many other South American economies (it is projected at just over 7 per cent per annum in the 1973-74 period in the biennial economic plan), it will have the effect of moderating in real terms the recent sharp salary growth. Indeed if that moderation were not to take place and if teacher salaries raised in order to maintain their present purchasing power, or even to gain, the burdens of educational expansion objectives and of the reform would drive educational expenditures to an impossible proportion of public funds. As Chart 18 shows, there is very little 'room' left for salary increases between now and 1980 even if our highest growth projection is not to be exceeded in real terms!

The effects of salary increases decreed by the 1972-73 acts will certainly increase salaries in excess of 35 per cent in current money terms. Inflation, by 1974 will have offset perhaps half of that amount.

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[1] See Decreto Ley No. 19 864, 26 December 1972, a 'Law for the Biennial Budget of the National Public Sector'.

It seems probable that by the end of 1973 more than half of all the real increase in salaries we projected for the decade had already been awarded. Acceleration of world-wide inflation in 1974 would act to moderate these effects if further awards lag behind the inflationary rate.

It is not unreasonable to expect that in the long run educational expenditures might account for a larger proportion of public expenditures than was true at the end of the past decade, as they have in the past. Recent salary policies have already accomplished this change. Any further relative priority given to education as opposed to other public activities will be an important policy variable. Such priority will determine the extent to which high rates of growth of real expenditure, in excess of the rate of increase of public funds, can be sustained.

Because we anticipate the strong possibility of a growing conflict between educational objectives and the public finance necessary to achieve them, we shall consider two additional questions. What are the possible approaches to cost saving; and what additional sources of finance might become available?

One way of cutting costs (or, more precisely of slowing their rate of increase) is to stretch out the achievement of educational objectives further into the future. This method might mean postponing the rate of increase of enrolments at all levels of schooling, or slowing it selectively with respect to the level and type of schooling. Some of the most expensive levels of schooling could be expanded less rapidly. Another possibility is that the rate at which universal schooling is extended into geographically remote areas and those relatively more expensive to service might be slowed. Some degree of new geographical dispersion will be important in any case, in order to gain pilot experience from which to devise optimal methods. A definite schedule for the introduction of nuclearization and the revised curriculum is already built into the timetable for implementation of the reform. This timetable may be difficult to change without making the introduction of the reform less efficient, since it is disruptive not to follow through completely with children who have begun on a new curricular track. Such considerations suggest that it might be better to delay the introduction of the reform in some areas, rather than to prolong its implementation.

Future teacher salary policy is an important, perhaps critical variable when we consider approaches to cost saving. Within the limits of what can be accepted in terms of national goals such as income distribution, and in response to the important interests of this very large category of public servants, it will be more important than ever to mediate carefully between the needs of teachers for further pay increases and the national need for spreading educational improvement as quickly and fully as possible. It is important to keep up the large output of appropriately trained new teachers from the normal schools and from the improved programmes of teacher education. A large number of newly trained teachers will not only provide a fresh infusion of new methods. but will also tend to keep the supply-demand balance of teachers from being an additional source of pressure on teacher salaries.

There is room (as in all school systems throughout the world) for further improvement in work and performance standards, which in the aggregate would have the effect of increasing the productivity of the educational system, both in administrative arrangements and in the classroom. Although we have noted impressive improvement in some categories of student/teacher ratios in recent years, there have been persistent variations. We have seen that the present averages do not leave much room for cost reductions; but it may be that a stronger emphasis throughout the educational system on the attainment of minimum student/teacher ratios could raise the averages further without impairing the teaching process itself.

The other approach to financial stress is to look for new sources of funding for schools, so that proportionally less reliance need be placed on the central budget of the State. Perhaps as administrative decentralization is accomplished, general economic development will bring with it a gradually increased capability of applying direct taxation and more forms of indirect taxation at the local level. Then local funds can more readily be obtained than has seemed possible or appropriate in the past.

More attention might in the future be directed toward selectively greater reliance on school fees than has seemed desirable or appropriate in the past. This is a difficult area and a controversial one, particularly in the case where the direction of change is from a tradition of no fees or low fees to their imposition. Nobody likes to be asked to pay for something which traditionally has been free. The general philosophy of fee charging may be stated in a kind of double negative: the best alternative, if something cannot be provided free to the public, may not be simply not to provide it at all. Of course, private fee-charging education is already a significant part of the educational scene, and its importance can be expected to continue.

Some general principles seem worth citing for the consideration of this question. The use of fees will be counterproductive in areas of schooling development where there is a strong social need to develop an acceptance of schooling and a sense of its benefits. Fees could be an important source of new finance in areas where social demand strongly outweighs the capacity to provide schooling as rapidly as the public would like. Another general principle is to consider fee paying as most acceptable in those areas of education which are most likely to return a tangible value to the recipient himself; specialized university training and potentially lucrative vocational education are the most obvious examples.

Peru already has a modest involvement in a student loan programme, the prime purpose of which is to prevent lack of money from depriving worthy candidates of university attendance. Perhaps the expansion of this programme particularly for those being trained for occupations of high future reward, could be combined with greater reliance on assessment of fees for highly-specialized education. The effect could be to place a greater part of the financial burden of education on those who benefit.

The case is much stronger that general education and primary basic education should be broadly achieved throughout the society, and that fees to compensate for these benefits are less appropriate than for higher education. However, only national discussion and national preference can settle these questions. Experience with alternatives that are available in the rest of the world may help to suggest some answers.

It seems likely that unless costs can be cut or new resources made available from other than traditional sources, questions of priority and choice will have to be asked when the objectives of further educational expansion and reform are considered. We hope that these questions can be dealt with successfully, because the challenges posed and the far-reaching implications of Peruvian success in meeting the goals of reform can be important influence on other countries, many of which are already looking to its example as a model for their own educational systems.

Appendixes

Table 1. Expenditure and sector origin of product at current prices(1) 1959-1968(2) ($J'000,000)

	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970
1. Private consumption	34 300	38 405	42 960	49 538	57 117	66 450	82 565	96 723	113 494	137 667	152 227	174 759
2. Public consumption	4 199	4 776	5 938	6 771	7 714	10 213	12 542	14 796	16 721	19 379	19 466	23 510
3. Gross fixed capital formation	8 441	5 941	12 293	15 141	15 111	15 389	19 210	22 563	23 394	24 104	26 204	27 853
of which :												
(a) Construction	3 741	4 250	5 372	6 559	6 060	6 963	8 829	10 308	10 470	10 450	-	-
(b) Equipment	4 700	5 291	6 921	8 582	9 051	8 426	10 381	12 255	12 924	13 644	-	-
4. Net change in stocks	506	2 751	1 930	1 584	1 280	2 722	2 160	4 936	7 623	1 689	1 202	-678
5. Export of goods and services(3)	10 123	13 466	15 343	16 689	16 897	20 594	20 700	24 320	27 517	38 375	41 552	48 597
6. Imports of goods and services(4)	-11 309	-13 421	-16 170	-18 023	-19 409	-20 374	-24 177	-29 322	-35 986	-39 962	-40 439	-42 056
7. GNP at market prices	46 260	55 518	62 294	71 700	78 710	94 994	113 000	134 016	152 763	181 242	200 272	231 985
8. Capital consumption	-2 377	-3 282	-3 574	-4 121	-4 724	-5 175	-6 370	-7 846	-9 662	-13 084	-14 634	-23 578
9. NNP at market prices	43 883	52 236	58 720	67 579	73 986	89 819	106 630	126 170	143 101	168 158	185 638	208 407
10. Indirect taxes	-3 865	-4 952	-6 184	-7 071	-8 264	-10 799	-13 312	-15 795	-17 352	-20 733 (	19 720 (	21 867
11. Subsidies	682	882	1 151	1 523	1 735	2 158	2 493	2 380	3 651	3 986 (		
12. National income	40 700	48 166	53 687	62 031	67 457	81 178	95 811	112 755	129 400	151 411	165 918	186 540
of which(1) net value added by :												
13. Agriculture	10 808	12 254	13 760	15 010	14 764	17 133	19 412	22 421	25 900	29 692	34 898	40 800
14. Mining and quarrying	1 885	3 083	3 093	3 171	3 383	4 739	5 860	8 112	7 720	8 974	9 861	10 269
15. Manufacturing	6 998	8 281	9 359	10 918	11 146	13 308	15 166	16 869	21 146	26 320	30 404	33 279
16. Construction	1 797	1 966	2 144	2 551	2 772	3 716	4 693	5 400	7 086	7 576	17 425(5)	18 535(5)
17. Transport, storage and communication	1 838	2 051	2 311	2 770	3 002	3 771	4 330	4 963	6 058	7 846	8 551	9 381
18. Electricity, gas, water, etc.	251	303	346	447	553	611	866	1 207	1 375	1 806	1 628	1 840
19. Trade	4 441	5 871	6 665	8 596	11 030	12 689	14 450	17 269	17 407	19 901	21 779	24 066
20. Financial institutions	1 307	1 367	1 561	2 167	2 449	2 461	2 877	3 322	3 712	4 165	5 112	5 574
21. Housing	3 062	3 457	3 819	4 052	4 253	4 732	5 583	6 144	6 708	8 164	-(5)	-(5)
22. Administration	3 499	3 898	4 796	5 563	6 562	8 521	10 569	12 715	14 089	15 631	15 886	19 724
23. Other services	4 814	5 635	5 833	6 786	7 543	9 497	12 005	14 333	17 849	21 336	20 374	23 073
24. Net factor income to abroad	1 093	1 391	1 591	1 676	1 809	1 747	1 902	2 767	4 100	4 540	5 016	3 574
25. GDP at market prices (7 + 24)	47 353	56 909	63 885	73 376	80 519	96 741	114 902	136 783	156 863	185 782	205 288	235 559

(1) Value added broken down by individual industrial sectors is available only on a net and factor cost basis at current prices and on a gross and market prices basis at current prices. Consequently, it was not possible to present in a similar way these two tables.

(2) For the years 1950 to 1958 comparable data are shown in National accounts of less developed countries 1950-1966, OECD, Development Centre, Paris, July, 1968.

(3) Including gross factor income received from abroad.

(4) Including gross factor income paid to abroad.

(5) Housing included with construction.

Table II Income, saving and investment at current prices, 1959-1967(1) (S/'000,000)

	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970
1. Compensation of employees	19 506	22 260	25 338	28 781	32 319	38 705	46 217	53 850	63 969	74 946	-	-
(a) wages and salaries	-	-	-	-	-	-	-	-	-	-	-	-
(b) employers' contribution to social security	-	-	-	-	-	-	-	-	-	-	-	-
2. Net income of unincorporated firms(2)	13 201	14 151	15 829	18 323	18 996	23 439	26 514	31 015	36 741	42 559	-	-
3. Net interest, rents and dividends(3	4 711	6 303	7 071	8 242	8 918	8 544	10 135	10 7[illegible]3	-	-	-	-
4. Net income of households	37 418	42 714	48 238	55 346	60 233	70 688	82 866	95 608	-	-	-	-
5. Net income of corporated firms) 6. Net income of public firms) 7. Government income from property)	3 282	5 452	5 449	6 685	7 224	10 490	12 945	17 147	-	-	-	-
8. National income	40 700	48 166	53 687	62 031	67 457	81 178	95 811	112 755	129 400	151 411	165 918	186 540
9. Indirect taxes net of subsidies(4)	3 183	4 070	5 033	5 548	6 529	8 641	10 819	13 415	13 70[illegible]	16 747	19 720	21 867
10. Net current transfers from abroad	164	454	602	363	346	213	240	78	463	576	-426	1 623
11. Net disposable income(5)	44 047	52 690	59 322	67 942	74 332	90 032	106 870	126 248	143 564	168 734	165 212	210 030
(a) private sector and public enterprises	39 474	46 403	51 827	59 744	65 794	79 973	94 736	111 944	128 466	150 103	162 345	189 349
of which: households	37 738	43 326	48 966	55 837	61 766	72 779	85 248	98 380	118 733	137 662	n.a.	n.a.
(b) administration	4 573	6 287	7 495	8 198	8 538	10 059	12 134	14 304	15 098	18 631	22 867	29 681
12. Consumption	38 499	43 181	48 898	56 309	64 831	76 663	95 107	111 519	130 215	157 046	171 693	198 269
(a) private	34 300	38 405	42 960	49 538	57 117	66 450	82 565	96 723	113 494	137 667	152 227	174 759
(b) public	4 199	4 776	5 938	6 771	7 714	10 213	12 542	14 796	16 721	19 379	19 466	23 510
13. Net savings	5 548	9 509	10 424	11 633	9 501	13 369	11 763	14 729	13 349	11 688	13 519	11 761
(a) private sector and public enterprises	5 174	7 998	8 867	10 206	8 677	13 523	12 171	15 221	14 972	12 436	10 118	5 590
of which: households	3 438	4 921	6 006	6 299	4 649	6 329	2 683	1 657	5 239	-5	n.a.	n.a.
(b) administration	374	1 511	1 557	1 427	824	-154	-408	-492	-1 623	-748	3 401	6 171
14. Capital consumption allocation	2 377	3 282	3 574	4 121	4 724	5 175	6 370	7 846	9 662	13 084	14 634	23 578
15. Net lending and capital transfers from abroad(6)	1 022	-499	225	971	2 166	-433	3 237	4 924	8 006	1 011	-975	-8 164
16. Gross capital formation(7)	8 947	12 292	14 223	16 725	16 391	18 111	21 370	27 499	31 017	25 783	27 178	27 175
(a) Gross fixed capital formation	8 441	9 541	12 293	15 141	15 111	15 389	19 210	22 563	23 394	24 094	25 360	27 853
i. private sector and public enter.	7 752	8 882	11 065	13 596	14 118	13 614	16 163	18 313	19 649	20 817	21 870	22 125
ii. administration	689	659	1 228	1 545	993	1 775	3 047	4 250	3 745	3 277	3 490	5 728
(b) net change in stocks	506	2 751	1 930	1 584	1 280	2 722	2 160	4 936	7 623	1 689	1 818	-678

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(1) For the years 1950 to 1958 comparable data are shown in National accounts of less developed countries, 1950-1966, OECD, Development Centre, Paris, July 1968.

(2) Net income of all enterprises which do not employ remunerated personnel.

(3) Adjusted for interest on consumers' debt and interest on public debt.

(4) Including also net income of government monopolies such as post offices, tobacco sales agents, etc.

(5) Net disposable income = items 8 + 9 + 10 = items 12 + 13

(6) Also includes net change in foreign reserves

(7) Gross capital formation = items 13 + 14 + 15.

Table III. Receipts of local governments 1960-1970 (S/. '000, 000)

	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970
Receipts from persons	132	161	167	224	181	261	298	377	711	892	1 030
Indirect local taxes	141	153	150	225	362	410	552	730	546	624	721
Non-tax receipts	103	122	198	134	121	138	180	220	292	328	380
TOTAL RECEIPTS	381	436	515	583	664	809	1 030	1 327	1 549	1 844	2 131

Source: Central Reserve Bank of Peru.

Table IV. Current and capital expenditures of local governments 1960-1970 (S/. '000,000)

	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970
A. Current expenditures											
Consumption	361	403	446	515	589	746	891	1 052	1 351	1 492	1 439
- Salaries	220	247	293	350	382	483	585	669	825	881	953
- other	141	156	153	165	207	263	306	383	526	611	486
Subsidies	5	11	19	25	20	21	26	31	35	39	20
Transfers	10	11	16	19	20	22	25	28	31	33	61
Total current expenditures	376	425	481	559	629	789	942	1 111	1 417	1 564	1 520
B. Capital expenditures											
Plant and equipment	12	14	18	21	27	35	39	56	68	90	70
New construction	56	64	80	88	108	193	458	349	355	417	631
Total capital expenditures	68	78	98	109	135	228	497	405	423	507	701
TOTAL	444	503	579	668	764	1 017	1 493	1 516	1 840	2 071	2 221

Source: Central Reserve Bank of Peru.

Table V. Consolidated accounts of current public receipts, 1960-1970[1] (S'000, 000)

	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970
A. Indirect taxes											
Tariff duties	1 601	1 965	2 058	2 345	3 619	5 053	5 702	6 554	7 262	7 876	8 158
Other indirect taxes	2 922	3 649	4 220	5 153	6 367	7 124	8 746	9 304	11 864	13 422	14 940
Sub-total	4 523	5 614	6 278	7 498	9 986	12 177	14 448	15 859	19 126	21 298	23 098
B. Direct taxes											
Profit taxes	2 375	2 588	2 778	3 196	3 296	3 457	3 583	5 176	6 059	7 776	8 482
Income taxes	1 041	1 140	1 414	1 996	2 176	3 339	4 432	4 766	6 088	6 803	8 597
Other direct taxes	164	190	176	238	236	370	451	501	619	702	1 400
Sub-total	3 580	3 918	4 368	5 430	5 708	7 166	8 466	10 443	12 746	15 281	18 479
C. Other government receipts	429	570	793	766	813	1 135	1 347	1 493	1 607	2 151	2 190
TOTAL	8 532	10 102	11 439	13 694	16 507	20 478	24 301	27 741	33 479	36 730	43 767
% public receipts of GDP	14.9	15.8	15.6	17.0	17.1	17.8	17.8	17.7	18.0	18.8	18.6

1. Including receipts and expenditures of local governments.

2. Estimated.

Source: Central Reserve Bank of Peru.

Table VI. Private saving (S/. '000,000)

	Private sector and public enterprises soles	% GCF	Of which households soles	% GCF	Gross capital formation
1950	1 773	65.2	1 058	38.9	2 721
1951	3 197	70.5	1 863	41.1	4 537
1952	3 160	57.9	2 061	37.8	5 455
1953	3 415	57.3	2 467	41.4	5 957
1954	2 902	55.9	1 593	30.7	5 192
1955	2 923	43.9	1 678	25.2	6 658
1956	4 690	54.4	3 151	36.6	8 617
1957	5 196	51.3	3 782	37.3	10 135
1958	5 171	50.7	4 068	39.9	10 199
1959	5 174	57.8	3 438	38.4	8 947
1960	7 998	65.1	4 921	40.0	12 292
1961	8 867	62.3	6 006	42.2	14 223
1962	10 206	61.0	6 299	37.7	16 725
1963	8 677	52.9	4 649	28.4	16 391
1964	13 523	74.7	6 329	35.0	18 111
1965	12 171	59.5	2 683	12.6	21 370
1966	15 221	55.4	1 657	6.0	27 499
1967	14 972	48.3	5 239	16.9	31 017
1968	12 436	48.2	-5	0.0	25 783

Source: Data Table I, Appendix I, pre-1960 data from: OECD Development Centre, National accounts of less-developed countries 1959-1968, Paris, 1970.

Table VII. Personal consumption cost-of-living deflator

Year	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970[1]	1971[1]	1972[1]
Deflator 1970 = 100	.4384	.4606	.4749	.4926	.5409	.6300	.6857	.7527	.8966	.9522	1.000	1.067	1.1453

[1] Deflator extended forward to 1972 from data of International Labour Office, *Yearbook of Labour*, Statistics, 1972, Geneva, 1972.

Source: Data of Banco Central de Reserva del Perú, *Cuentas nacionales del Perú, 1960-69*, Tomo 1, Lima, 1970, Table 9, p. 26, index of personal consumption expenditures.

Table I. Trend of total public recurrent expenditure by level of educ

	1960	1961	1962	1963	1964
Administration[1]	26.4	32.7	47.3	123.0	165.9
Primary education	847.3	1 019.4	1 207.7	1 400.3	1 643.2
Teacher training	23.7	36.7	51.0	83.1	89.3
Secondary education	302.4	404.6	502.3	577.2	789.2
Higher education	131.6	186.3	255.6	342.4	418.1
Out-of-school programmes	14.2	20.8	23.2	40.2	25.8
TOTAL BY LEVEL	1 345.6	1 700.5	2 087.1	2 566.2	3 131.5
Other expenditure[2]	93.3	58.9	181.6	229.6	263.4
TOTAL RECURRENT EXPENDITURE	1 438.9	1 759.4	2 268.7	2 795.8	3 394.9
Percentages	%	%	%	%	%
Administration[1]	1.83	1.85	2.08	4.40	4.89
Primary education	58.88	57.94	53.23	50.08	48.40
Teacher training	1.65	2.09	2.25	2.97	2.63
Secondary education	21.02	23.00	22.14	20.65	23.25
Higher education	9.15	10.59	11.27	12.25	12.31
Out-of-school programmes	0.99	1.18	1.03	1.44	0.76
TOTAL BY LEVEL	93.52	96.65	92.00	91.79	92.24
Other expenditure[2]	6.48	3.35	8.00	8.21	7.76
TOTAL RECURRENT EXPENDITURE	100.00	100.00	100.00	100.00	100.00

1. Includes both national and regional administrations.
2. Includes family allowances and other transfers.

Source: Peru, Ministerio de Educación, *Oficina Sectoral de Planificac*
Lima, 1973, for IIEP/Unesco, Table III.13.

by level of education (S/.'000,000)

1963	1964	1965	1966	1967	1968	1969	1970	1971	1972
123.0	165.9	329.0	350.8	210.7	256.8	222.2	341.4	387.6	506.5
400.3	1 643.2	2 649.7	3 270.8	3 310.0	3 481.6	3 815.3	3 723.2	3 730.2	5 055.7
83.1	89.3	98.0	149.7	174.8	191.3	163.7	153.8	258.8	366.3
577.2	789.2	1 032.6	1 617.6	1 747.2	2 090.8	2 085.6	1 892.9	1 986.8	2 940.2
342.4	418.1	607.7	608.2	969.9	1 024.6	1 085.4	1 158.2	1 359.2	1 661.0
40.2	25.8	20.3	47.8	17.0	17.0	82.3	128.6	141.5	169.8
566.2	3 131.5	4 737.3	6 044.9	6 429.6	7 062.1	7 453.5	7 398.1	7 864.1	10 699.5
229.6	263.4	633.3	918.6	1 316.0	165.5	518.1	1 353.9	2 675.6	2 603.5
795.8	3 394.9	5 370.6	6 963.5	7 745.6	7 227.6	7 971.6	8 752.0	10 539.7	13 303.0
%	%	%	%	%	%	%	%	%	%
4.40	4.89	6.13	5.04	2.72	3.55	2.79	3.90	3.68	3.81
50.08	48.40	49.34	46.97	42.73	48.17	47.86	42.54	35.38	38.00
2.97	2.63	1.82	2.15	2.26	2.65	2.04	1.75	2.46	2.75
20.65	23.25	19.23	23.23	22.56	28.94	26.16	21.62	18.85	22.10
12.25	12.31	11.31	8.73	12.52	14.17	13.62	13.23	12.90	12.49
1.44	0.76	0.38	0.69	0.22	0.23	1.03	1.49	1.34	1.28
91.79	92.24	88.21	86.81	83.01	97.71	95.50	84.53	74.61	80.43
8.21	7.76	11.79	13.19	16.99	2.29	6.50	15.47	25.39	19.57
100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

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ral de Planificación, El financiamento de los gastos de educación en el Perú, 1960-72.

Table II. Trend of central government capital expenditure by level of education in public sector (S/'000, 000)

	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970
	Public	Public	Public	Public	Public	Public	Public	Public	Public	Public	Public
1. Administration	30.40	89.80	73.30	101.40	178.20	76.40	56.90	9.20	38.80	12.70	8.90
2. Primary	13.90	59.70	23.20	0.40	0.70	39.60	50.00	49.20	12.50	24.80	87.10
3. Secondary education	5.00	16.50	0.70	0.10	21.10	211.90	72.40	57.50	15.60	31.90	158.30
4. Teacher training	-	1.50	9.40	0.20	3.70	29.60	8.00	6.10	1.50	2.50	7.40
5. Higher education	9.30	19.50	43.40	55.10	95.50	113.30	150.20	153.60	235.60	178.00	171.40
6. Out-of-school programmes	-	-	-	1.30	0.30	3.20	3.70	0.20	-	-	12.70
7. Other	-	-	-	-	-	-	-	0.50	0.50	0.20	0.50
8. Total capital expenditure	58.60	187.00	150.00	158.50	299.50	474.00	341.20	276.30	304.50	250.10	446.30
9. Financed by central govt.	49.30	167.50	106.60	103.40	204.00	360.70	191.00	122.70	68.90	72.10	274.90
10. Total govt. capital expend.	591.00	1 150.00	1 447.00	884.00	1 640.00	2 819.00	3 754.00	3 340.00	2 854.00	2 983.00	4 273.00
11. Percentage 8. of 10.	9.92	16.26	10.37	17.93	18.26	16.81	9.09	8.27	10.67	8.38	10.44
12. Percentage 9. of 10.	8.34	14.57	7.37	11.70	12.44	12.80	5.09	3.67	2.41	2.42	6.43

Source: Cuenta General de la República - Contraloría general de la República, Balance del Ejercicio Presupuestal - Contraloría general del Ministerio de Educación, Oficina de Estudios Económicos y Financieros, Ministerio de Educación.

Table III. Trend of capital expenditure by type (S/'000,000)

	School buildings	Equipment	Other	Total
1960	44.2	5.1	-	49.3
1961	128.3	39.2	-	167.5
1962	91.5	15.1	-	106.6
1963	91.8	10.5	1.1	103.4
1964	126.2	70.0	7.8	204.0
1965	287.6	67.5	5.6	360.7
1966	133.5	45.2	12.3	191.0
1967	107.4	15.3	-	122.7
1968	50.0	18.9	-	68.9
1969	32.8	39.3	-	72.1
1970	184.9	88.6	1.4	274.9

Source: Contraloría General de la República, Contraloría General, Ministerio de Educación.

Table IV. Trend of central government recurrent expenditure on education and relationship to central government revenue (S/'000,000 current)

	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970
Recurrent expenditure[1]	1 439	1 759	2 269	2 796	3 395	5 371	6 964	7 746	7 228	7 972	8 752
Central government revenues[2]	8 151	9 666	10 924	13 111	15 843	19 669	23 231	26 467	31 870	36 886	43 507
Percentage educational expenditures of government revenues	17.65	18.20	20.77	21.32	21.43	27.30	29.98	29.27	22.68	21.61	20.12

1. Ministry of Education.
2. Banco Central de Reserva del Perú, Cuentas Nacionales del Perú, 1960-69, Tomo 1, Lima, 1970, estimated.

Table V. Trend of public educational expenditures related to G. D. P. (S/'000,000)

	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970
G. D. P.	56 909.0	63 885.0	73 376.0	80 519.0	96 741.0	114 902.0	136 783.0	156 863.0	185 782.0	205 288.0	235 559.0
1. Current expenditures	1 438.9	1 759.4	2 268.7	2 795.8	3 394.9	5 370.6	6 963.5	7 745.6	7 227.6	7 971.6	8 752.0
as a percentage of G. D. P.	2.53	2.76	3.09	3.47	3.51	4.67	5.09	4.94	3.89	3.88	3.72
2. Capital expenditures	19.30	167.50	106.60	103.40	204.00	360.70	191.00	122.70	68.90	72.10	279.90
as a percentage of G. D. P.	0.09	0.26	0.15	0.13	0.21	0.32	0.14	0.08	0.04	0.04	0.11
3. Total expenditures	1 488.2	1 926.9	2 375.3	2 899.2	3 598.9	5 731.3	7 154.5	7 868.3	7 296.6	8 043.7	9 026.9
as a percentage of G. D. P.	2.62	3.02	3.24	3.60	3.72	4.99	5.23	5.02	3.93	3.92	3.83

Source: Ministerio de Educación, Oficina de Presupuestos - Estudios económicos y financieros.

Table VI. Trend of university enrolments - public (1960-70)

Universities	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970
Total	27 776	31 124	35 550	39 526	47 355	54 035	60 207	66 014	73 611	75 131	86 102
1. Mayor de San Marcos	12 863	13 617	13 030	12 786	13 061	15 226	16 200	15 595	17 390	20 294	20 339
2. De San Antonio Abad	2 351	2 664	3 014	3 301	4 174	4 312	4 292	4 758	5 024	4 839	5 565
3. De Trujillo	4 823	5 256	5 542	5 547	6 780	5 495	6 006	5 665	5 515	4 809	5 624
4. De San Agustín	1 819	2 202	2 650	3 140	3 701	5 782	6 688	6 753	7 311	6 300	8 279
5. De Ingeniería	3 230	3 343	3 421	3 437	3 713	4 216	4 125	4 621	5 407	5 009	5 354
6. Agraria	743	756	835	964	1 220	1 376	1 857	2 063	1 993	2 116	2 392
7. San Luis Gonzaga	-	1 815	2 225	2 668	3 790	4 104	3 810	4 801	5 138	5 224	5 953
8. S. Cristóbal de Huamanga	202	344	431	551	747	975	1 041	1 078	1 451	2 217	1 911
9. Del Centro del Perú	1 645	914	1 584	2 263	3 114	3 215	3 084	2 498	2 571	2 640	3 276
10. De la Amazonía Peruana	-	-	243	223	453	-	566	699	672	662	715
11. Técnica del Atiplano	-	-	91	104	133	328	485	631	680	944	993
12. Técnica de Piura	-	119	189	275	342	363	390	491	612	676	716
13. Técnica de Cajamarca	-	-	211	336	520	772	966	1 080	1 108	1 101	1 403
- De Lambayeque	-	-	-	365	539	840	1 279	1 829	2 280	2 551	-
- Agraria del Norte	-	-	-	285	445	411	506	550	425	450	-
14. Federico Villarreal	-	-	1 812	2 806	5 950	5 565	7 573	9 630	10 951	10 873	13 245
15. Agraria de la Selva	-	-	-	-	-	35	52	70	171	184	228
16. Hermilio Valdizán	-	94	180	352	448	666	808	945	1 024	958	1 236
17. Daniel Alcidos Carrión	-	-	92	121	225	354	479	571	573	621	761
18. Técnica del Callao	-	-	-	-	-	-	-	413	947	-	1 184
19. De Educación E. G. V.	-	-	-	-	-	-	-	603	1 447	1 617	2 236
20. José F. Sánchez Carrión	-	-	-	-	-	-	-	670	921	1 046	1 216
21. Pedro Ruiz Gallo	-	-	-	-	-	-	-	-	-	-	3 476

Source: Oficina Sectorial de Planificación, Oficina de Estadística Educativa, Dirección de Planificación del Consejo Nacional de la Universidad Peruana.

Table VII. Trend of university enrolments - private (1960-70)

Universities	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970
Total	3 207	3 869	5 146	6 506	6 875	10 506	13 716	17 495	20 292	22 260	24 450
1. PU. Católica del Perú	3 207	3 869	4 521	4 986	4 648	4 772	5 053	5 456	5 159	5 072	5 702
2. Peruana Cayetano Heredia	-	-	270	384	417	474	459	473	611	536	622
3. Católica Santa María	-	-	236	626	1 034	1 500	1 603	2 108	3 216	3 750	3 949
4. Del Pacífico	-	-	-	88	136	184	248	271	292	359	397
5. De Lima	-	-	-	115	245	301	590	957	991	1 154	1 374
6. San Martín de Porres	-	-	119	261	330	460	561	809	1 709	3 855	3 900
7. Femenina del Sagrado Corazón	-	-	-	46	65	86	159	231	224	255	308
8. San Martín de Tarapoto	-	-	-	-	-	-	-	168	202	-	-
9. Inca Garcilazo de la Vega	-	-	-	-	-	2 729	3 224	3 608	4 255	4 645	5 151
10. Victor Andrés Belaúnde	-	-	-	-	-	-	-	-	629	851	1 073
11. De Piura	-	-	-	-	-	-	-	-	-	97	200
- Peruana de Ciencias y Tecnología	-	-	-	-	-	-	1 819	3 414	3 004	-	-
12. Ricardo Palma	-	-	-	-	-	-	-	-	-	1 686	1 774

Source: Oficina Sectorial de Planificación, Oficina de Estadística Educativa, Dirección de Planificación del Consejo Nacional de la Universidad Peruana.

Table VIII. Percentage structure of enrolments by age and grade, 1970

PRIMARY - DAY

Ages	Pre-escolar (%)	Total (%)	Transición (%)	Grade 1 (%)	Grade 2 (%)	Grade 3 (%)	Grade 4 (%)	Grade 5 (%)
Total	100.000	100.000	100.000	100.000	100.000	100.000	100.000	100.000
3	2.314							
4	20.586	0.015	0.054					
5	66.698	0.372	1.337	0.047				
6	9.236	9.764	33.586	3.193	0.119			
7	1.166	12.312	26.531	22.061	3.624	0.192		
8		12.871	15.465	22.108	21.543	3.816	0.196	
9		13.364	9.751	18.467	22.014	19.322	4.239	0.236
10		12.770	5.874	12.854	17.454	21.158	18.491	4.492
11		11.575	3.193	8.332	12.838	18.163	21.024	18.390
12		9.557	2.061	5.634	9.166	14.085	18.740	21.515
13		7.147	1.098	3.687	6.134	10.105	14.862	19.258
14		4.925	0.611	1.977	3.808	6.742	10.670	15.379
15		2.507	0.202	0.789	1.630	3.125	5.645	9.316
16		1.249	0.074	0.339	0.735	1.502	2.773	5.089
17		0.784	0.047	0.208	0.466	0.931	1.737	3.208
18		0.367	0.027	0.104	0.207	0.412	0.800	1.550
19		0.179	0.014	0.060	0.093	0.199	0.383	0.765
20		0.086	0.007	0.033	0.052	0.093	0.171	0.363
21		0.045	0.013	0.025	0.032	0.048	0.077	0.154
22		0.027	0.004	0.015	0.019	0.024	0.059	0.091
23		0.018	0.004	0.011	0.015	0.015	0.041	0.049
24		0.011	0.004	0.005	0.008	0.012	0.023	0.037
25-29		0.055	0.043	0.051	0.043	0.056	0.069	0.108

Note: Underlined figures are at official normal age for each grade.

Source: Perú, Ministerio de Educación, Estadísticas Básicas Series Históricas, Lima, August 1972, Tables 38, 41, 44 and 47.

Table VIII (continued)

SECONDARY - DAY

Ages	Total (%)	Grade 1 (%)	Grade 2 (%)	Grade 3 (%)	Grade 4 (%)	Grade 5 (%)
Total	100.000	100.000	100.000	100.000	100.000	100.000
10	1.062	3.706				
11	2.119	5.466	2.468			
12	8.124	21.642	6.162	2.815		
13	13.122	24.149	20.440	5.668	3.366	
14	16.520	20.142	23.985	19.735	5.799	4.846
15	17.097	13.649	20.570	23.669	19.774	6.197
16	15.095	6.567	13.459	19.569	22.762	20.303
17	11.172	2.597	7.061	13.916	19.264	22.492
18	6.972	1.095	3.090	7.432	12.979	17.938
19	4.260	0.475	1.394	3.648	8.221	13.098
20	2.232	0.233	0.632	1.787	4.008	7.588
21	0.991	0.099	0.279	0.756	1.699	3.530
22	0.513	0.053	0.162	0.399	0.947	1.702
23	0.257	0.022	0.098	0.192	0.419	0.913
24	0.165	0.028	0.051	0.121	0.279	0.571
25-29	0.208	0.046	0.088	0.202	0.326	0.616
30-34	0.093	0.031	0.061	0.091	0.157	0.206

Note: Underlined figures are at official normal age for each grade.

Source: Perú, Ministerio de Educación, Estadísticas Básicas Series Históricas, Lima, August 1972, Tables 38, 41, 44 and 47.

Table VIII (continued)

PRIMARY - EVENING (Laboral)

Ages	Total (%)	Transición (%)	Grade 1 (%)	Grade 2 (%)
Total	100.000	100.000	100.000	100.000
10	1.479	10.995		
11	1.355	2.095	7.652	
12	2.074	3.652	3.410	6.956
13	3.220	3.784	4.393	3.689
14	6.143	9.695	7.009	6.038
15	10.573	9.412	10.910	9.839
16	11.825	8.677	10.299	9.199
17	12.198	6.647	8.005	22.816
18	8.758	6.187	7.261	6.661
19	7.742	5.300	6.505	5.604
20	6.321	4.906	5.344	4.636
21	4.647	3.232	3.681	3.456
22	4.159	3.396	3.460	3.327
23	3.194	2.430	2.924	2.410
24	2.680	2.476	2.521	2.410
25-29	7.365	8.092	8.137	7.095
30-34	3.294	3.908	4.380	2.938
35-39	1.672	2.673	2.124	1.658
40 and above	1.301	2.443	1.985	1.268

Source: Perú, Ministerio de Educación, *Estadísticas Básicas Series Histor*

de 1 (%)	Grade 2 (%)	Grade 3 (%)	Grade 4 (%)	Grade 5 (%)	Grade 6 (%)
000	100.000	100.000	100.000	100.000	100.000
652					
410	6.956				
393	3.689	10.303			
009	6.038	6.774	11.688		
910	9.839	12.547	12.031	15.948	
299	9.199	12.203	13.927	12.856	[illegible].563
005	22.816	10.357	11.722	12.960	11.071
261	6.661	9.531	9.515	10.727	12.109
505	5.604	8.023	8.225	10.045	11.279
344	4.636	6.183	6.505	7.770	9.789
681	3.456	4.391	4.902	5.914	7.671
460	3.327	4.373	4.002	4.626	6.590
924	2.410	3.197	3.356	3.744	4.665
521	2.410	2.431	2.634	2.841	3.743
137	7.095	4.096	6.875	7.980	10.232
380	2.938	2.980	2.699	2.712	3.793
124	1.658	1.586	1.160	1.125	1.507
985	1.268	1.025	0.759	0.752	0.988

ásicas Series Historícas, Lima, August 1972, Tables 38, 41, 44 and 47.

Table VIII (continued)

SECONDARY - EVENING (Laboral)

Ages	Total (%)	Grade 1 (%)	Grade 2 (%)	Grade 3 (%)	Grade 4 (%)	Grade 5 (%)	Grade 6 (%)
Total	100.000	100.000	100.000	100.000	100.000	100.000	100.000
12	0.270	1.030					
13	0.866	2.633	0.818				
14	2.597	6.342	3.183	1.369			
15	5.788	13.408	6.877	2.890	1.789		
16	9.295	17.553	12.899	6.933	2.965	1.950	
17	11.250	15.849	15.924	11.894	6.675	2.962	2.339
18	11.028	11.905	14.105	13.445	10.541	5.802	2.710
19	11.024	8.759	11.662	14.183	13.536	9.871	6.581
20	9.699	5.901	8.913	11.298	13.314	12.111	10.546
21	7.081	3.426	5.326	8.542	9.497	10.799	10.744
22	6.167	2.755	4.321	6.419	9.152	9.983	10.823
23	4.815	2.032	3.188	4.652	6.804	8.568	9.687
24	4.003	1.620	2.542	3.838	5.042	7.555	9.159
25-29	9.258	3.943	5.868	8.483	12.132	17.079	21.157
30-34	3.981	1.539	2.433	3.803	4.992	8.136	8.801
35-39	1.841	0.731	1.384	1.403	2.342	3.234	4.797
40 and above	1.037	0.574	0.557	0.848	1.210	1.950	2.656

Source: Peru, Ministerio de Educación, Estadísticas Básicas Series Históricas, Lima, August 1972, Tables 38, 41, 44 and 47.

Table IX. School size : number of pupils per school by region, 1970

	No. of primary schools	No. of pupils per primary school	No. of secondary general schools	No. of pupils per secondary general school	No. of secondary technical schools	No. of pupils per secondary technical school	No. of total secondary schools	No. of pupils per secondary school (general and technical)
PERU TOTAL	20 034	124	1 451	376	414	308	1 865	434
REGION 1	3 053	116	179	350	57	276	236	333
2	1 995	106	137	374	37	218	174	320
3	3 509	97.2	185	298	60	224	245	280
4	1 101	128	109	301	23	234	132	364
5	1 866	72.3	72	335	20	284	92	324
6	1 518	106	66	297	23	218	89	276
7	1 367	99.4	44	305	19	279	63	297
8	3 487	106	208	392	48	231	256	362
9	2 118	278	451	473	127	455	578	470

Source: Data from Ministerio de Educación, Censo Nacional Escolar - 1970, Series Establecimientos, Volumen I, Lima, Table 24.

Table X. Pupil/teacher ratios by region, 1970

	No. of primary teachers	Pupil/ teacher ratio primary	No. of secondary general teachers	Pupil/ teacher ratio sec. general	No. of secondary technical teachers	Pupil/ teacher ratio secondary technical	No. of total secondary teachers	Pupil/ teacher ratio secondary (general and technical)
PERU TOTAL	64 004	38.9	21 863	25.0	6 333	20.1	28 196	28.7
REGION 1	8 266	42.7	2 399	26.2	794	19.8	3 193	24.6
2	5 826	36.2	1 943	24.5	473	17.1	2 416	23.1
3	8 763	39.1	2 470	22.3	762	17.6	3 230	21.2
4	3 996	35.3	1 467	29.0	337	16.0	1 800	26.7
5	4 840	38.2	961	25.1	287	19.8	1 250	23.8
6	3 782	42.6	836	23.4	330	15.2	1 170	21.0
7	3 289	41.3	535	25.0	218	24.3	753	24.8
8	9 131	40.4	2 864	28.5	612	18.9	3 480	26.6
9	16 111	36.6	8 388	25.5	2 520	22.9	10 910	24.9

Source: Calculated from data of Table 24 and from Ministerio de Educación, Censo Nacional Escolar - 1970, Serie Personal, Volumen I, Lima, pp. 4, 16 and 28.

Table XI. Regional population per school, 1970

	Total pop. per primary school	Total pop. per secondary general school	Total pop. per secondary techn. school	Total pop. per secondary school general & techn.
PERU TOTAL	678	9 360	32 800	7 280
REGION 1	689	11 760	36 900	8 920
2	565	8 230	30 500	6 480
3	558	14 370	32 800	8 040
4	617	6 230	29 500	5 140
5	635	16 410	59 000	12 840
6	474	10 900	31 300	8 090
7	655	20 370	47 200	14 230
8	611	10 250	44 400	8 330
9	1 307	6 140	21 800	4 790

Source: Data from Tables 24 and 26.

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The book

This is a study of the prospects for financing further rapid growth of the educational sector in Peru while a far-reaching educational reform is put in place. It considers the recent history of economic performance and surveys the prospects for achieving a consistent balance between projected educational goals and the resources that further economic growth can make available. The work gives special attention to questions that concern the costing of qualitative changes associated with the reform.

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